









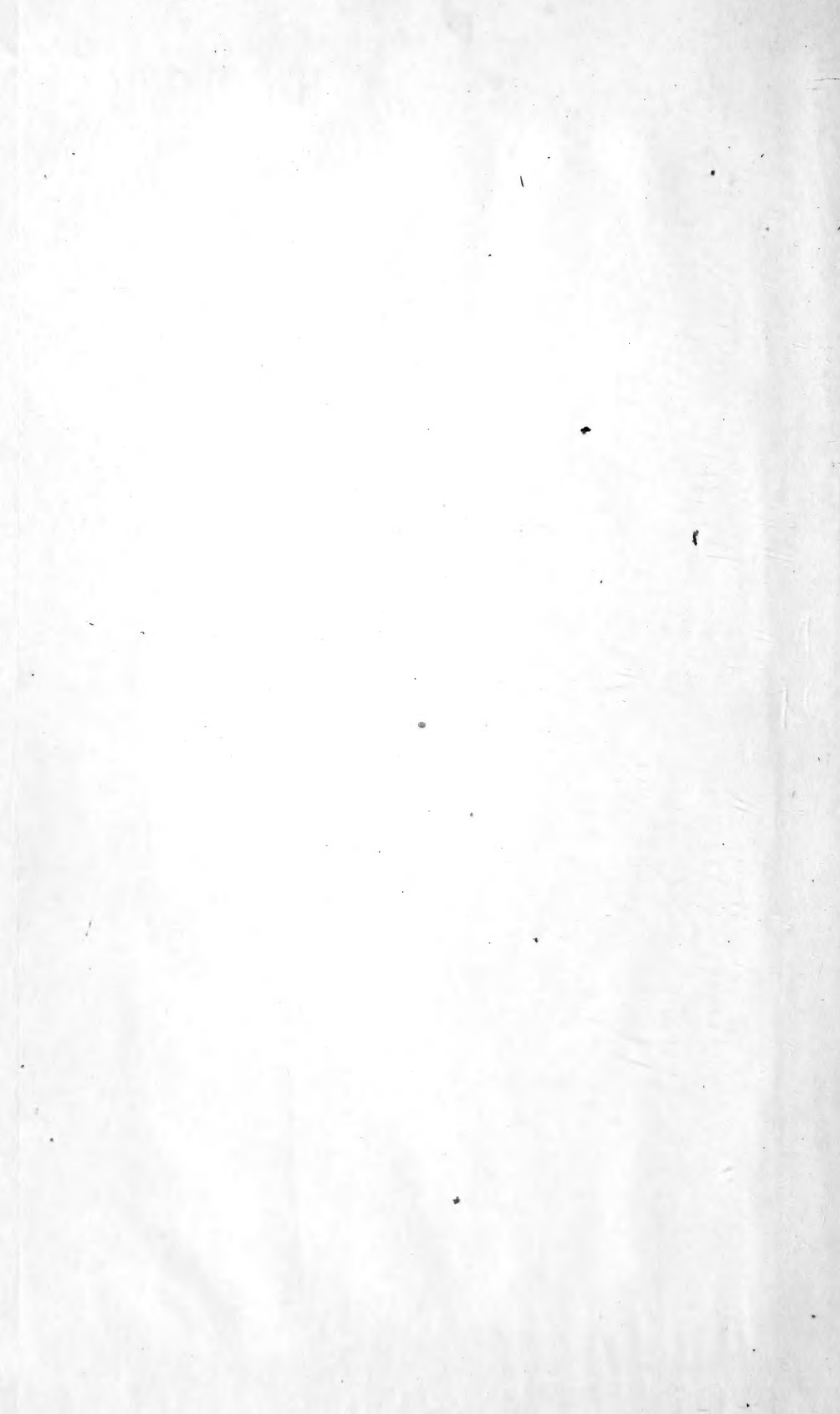






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Note: See Proc. U.S.N.M. 43, No. 1929-1912.  
 Descriptions of a new Genus of Isopod Crustaceans, and two New Species from South America. Excirolana.

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A NEW TERRESTRIAL ISOPOD FROM GUATE-  
MALA, THE TYPE OF A NEW GENUS

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

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No. 1535.—From the Proceedings of the United States National Museum,  
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# A NEW TERRESTRIAL ISOPOD FROM GUATEMALA, THE TYPE OF A NEW GENUS.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

The following description is of a new isopod which was collected by Messrs. E. A. Schwarz and H. S. Barber, in the spring of 1906, at Livingston, Guatemala, and is now deposited in the United States National Museum. The single specimen found is the type of a new genus.

Family ARMADILLIDIDÆ.

SPHERARMADILLO, new genus. \*

*Description.*—Head margined in front. Frontal margin straight. Epistome with a slight shield-like convexity. Flagellum of second pair of antennæ composed of three articles. Eyes absent.

First thoracic segment with the epimera or coxopodites on the underside, extending almost the entire length of the lateral margin in the form of a wide band, not reaching the posterior margin of the segment and being cleft posteriorly by a rather deep fissure. The position and form of the coxopodite gives the lateral margin of the segment a thickened appearance. The epimera or coxopodites are not present on any of the following segments.

The terminal abdominal segment is triangular, with the apex obtusely rounded. The basal article of the uropoda is quadrangular, broader than long, not reaching beyond the lateral parts of the fifth abdominal segment, but extending considerably beyond the apex of the terminal abdominal segment. The inner branch extends considerably beyond the apex of the sixth abdominal segment and reaches a little beyond the inner post-lateral angle of the basal article of the uropoda. The outer branch is inserted in a notch about the middle of the inner lateral margin of the basal article and occupies a lateral position.

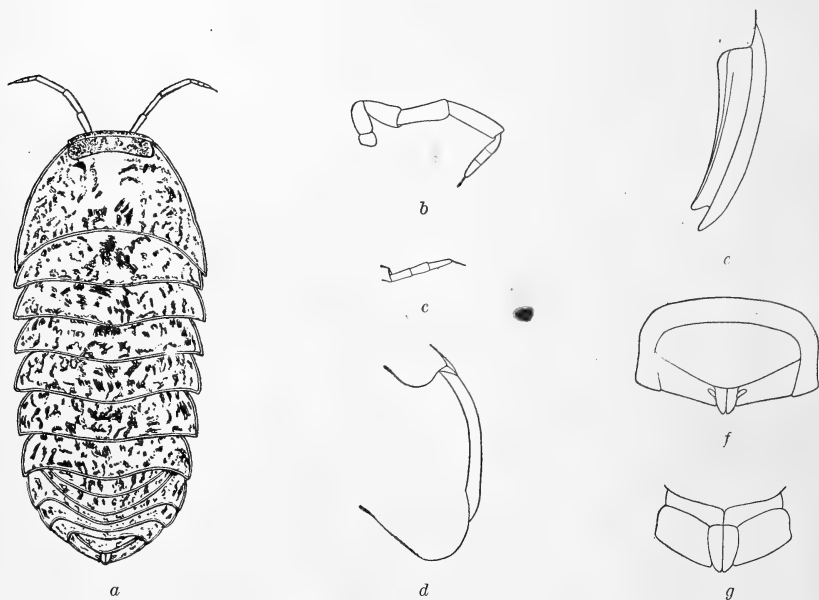
*Type of genus.*—*Spherarmadillo schwarzi*.

See Omer-Cooper, 1926, for criticism.

## SPHERARMADILLO SCHWARZI, new species.

*Description.*—Body convex, contractile into a ball, a little more than twice as long as wide, 50 mm. by 22 mm. Color yellow, with numerous arborescent markings of dark brown.

Head much wider than long, 3 mm. by 10 mm. with the front straight and margined. The epistome has a slight shield-like convexity. There is no trace of eyes. The first pair of antennæ are rudimentary and inconspicuous. The second pair have the first article small; the second is about twice as long as the first; the third is equal



SPHERARMADILLO SCHWARZI, *a*, DORSAL VIEW, x 3; *b*, SECOND ANTENNA, x 7; *c*, FLAGELLUM OF SECOND ANTENNA, x 7; *d*, LATERAL PART OF FIRST THORACIC SEGMENT (LATERAL VIEW), x 7; *e*, LATERAL PART OF FIRST THORACIC SEGMENT (VENTRAL VIEW), x 7; *f*, LAST TWO SEGMENTS OF ABDOMEN WITH UROPODA, x 7; *g*, UROPODA (VENTRAL VIEW), x 7.

in length to the second; the fourth is one and a half times as long as the third; the fifth is a little longer than the fourth. The flagellum is composed of three articles, the middle one of which is slightly shorter than either of the others, which are subequal.

The first thoracic segment is nearly twice as long as any of the following segments which are subequal. The first segment is 9 mm. in length. Each of the following is about 5 mm. long. The lateral parts of the first segment are slightly produced backward in rounded lobes. Epimera or coxopodites are present on the underside and extend in the form of a wide band along the entire lateral margin almost to the posterior margin and are cleft posteriorly by a rather deep fissure. The form and position of the coxopodites give a thick-

ened appearance to the lateral margin. Epimera are not present on any of the following thoracic segments.

The first segment of the abdomen is the longest, being 3 mm. in length. The two following segments are subequal and each is 2 mm. long. The next two segments, the fourth and fifth, are subequal and each is 1.5 mm. in length. The first two segments are covered laterally by the seventh thoracic segment. The sixth or terminal segment is triangular in shape. It is 9 mm. wide at the base and 4 mm. long in the median longitudinal line. The apex is obtusely rounded. The basal article of the uropoda occupies all the space between the terminal segment of the abdomen and the produced lateral parts of the fifth segment. It does not extend beyond the lateral parts of the fifth segment, but extends considerably beyond the apex of the triangular terminal segment. In shape it is quadrangular, broader than long, with the inner anterior part covered by the apical portion of the terminal abdominal segment. The inner branch of the uropoda extends considerably beyond the apex of the terminal abdominal segment and a little beyond the inner post-lateral angle of the basal article. The outer branch is inserted in a deep notch about the middle of the inner lateral margin of the basal article. This branch lies in a lateral position.

All the legs are ambulatory.

The type and only specimen was collected at Livingston, Guatemala, by Messrs. E. A. Schwarz and H. S. Barber, in April, 1906, and is in the U. S. National Museum. Cat. No. 33471.

This genus is perhaps more closely related to *Sphæroniscus* Gerstæcker than to any other genus of the Armadillididæ, these two being the only genera of that family in which the flagellum of the second antennæ is composed of three articles. *Spherarmadillo schwarzi* more closely resembles *Sphæroniscus portoricensis* Richardson<sup>a</sup> than the other species of that genus in the shape of the terminal abdominal segment, the basal article of the uropoda, and the form and position of the inner branch. It differs, however, from that species in the absence of eyes, the presence of distinct coxopodites on the underside of the first thoracic segment, and in the form and position of the outer branch of the uropoda. This branch is inserted in a notch in the middle of the inner lateral margin of the basal article, and it is this character which distinguishes it from all the species belonging to the genus *Sphæroniscus*.

This genus also resembles *Synarmadillo* Dollfus<sup>b</sup> in the form of the

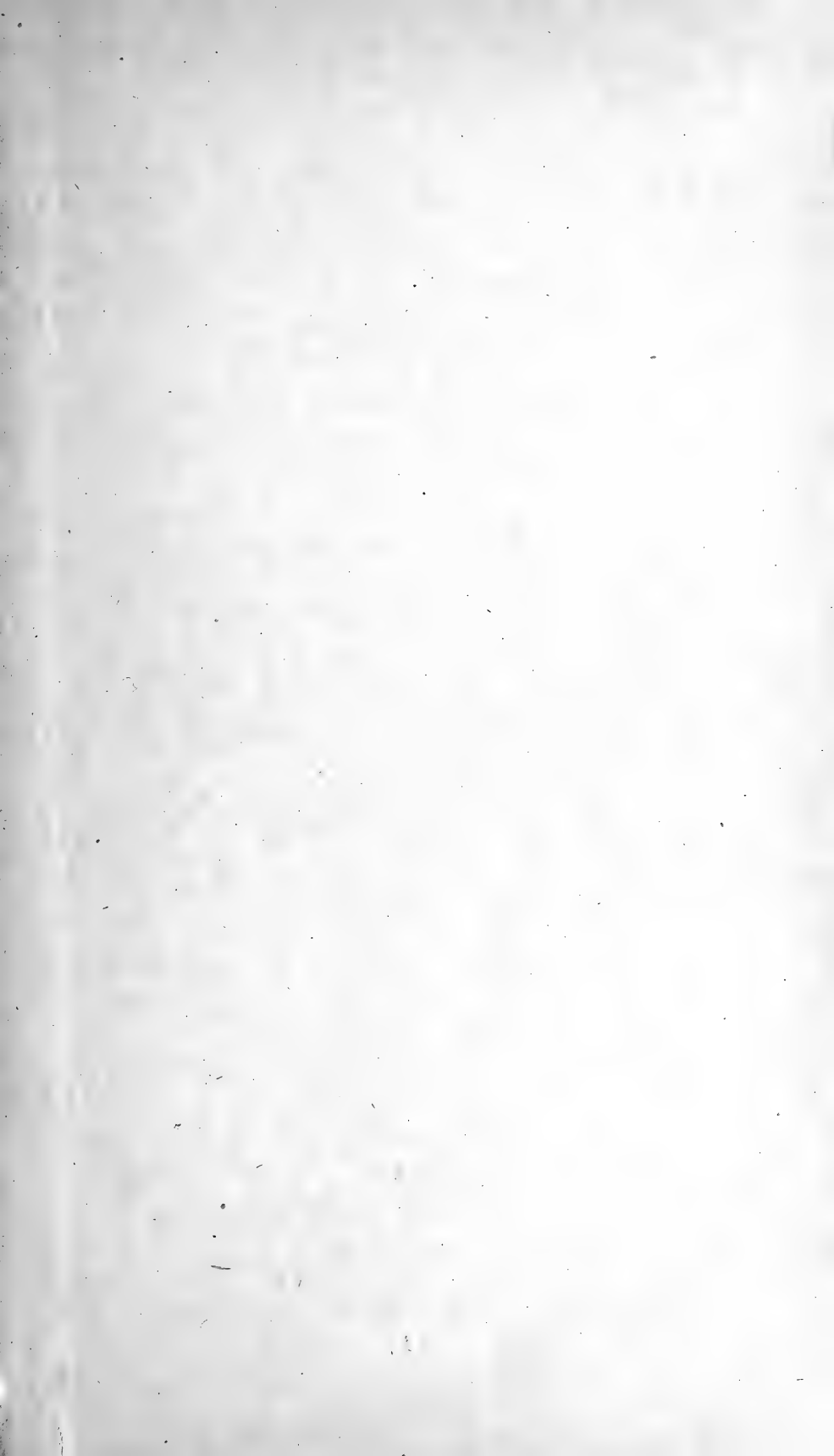
<sup>a</sup> Proc. U. S. National Museum, XXIII, 1901, p. 573; Bull. U. S. National Museum, No. 54, 1905, pp. 662-663.

<sup>b</sup> Ann. Soc. Entomologique de France, LXI, 1892, pp. 388-389, pl. vii, fig. 4.

terminal segment of the abdomen, the shape of the basal article of the uropoda, and the form and position of the inner branch. It differs, however, from that genus in having three articles instead of two to the flagellum of the second antennæ, in the form and position of the outer branch of the uropoda, which is inserted in a notch about the middle of the inner lateral margin of the basal article instead of at the inner post-lateral angle of that article as in *Synarmadillo*. The terminal abdominal segment is also shorter than in *Synarmadillo*, exposing more of the inner branches of the uropoda.

This species is named after Mr. E. A. Schwarz, custodian of Coleoptera in the U. S. National Museum, who collected the specimen.







ON SOME ISOPODS OF THE FAMILY DAJIDÆ  
FROM THE NORTHWEST PACIFIC OCEAN,  
WITH DESCRIPTIONS OF A NEW GENUS  
AND TWO NEW SPECIES

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

No. 1586.—From the Proceedings of the United States National Museum,  
Vol. XXXIII, pages 689–696.

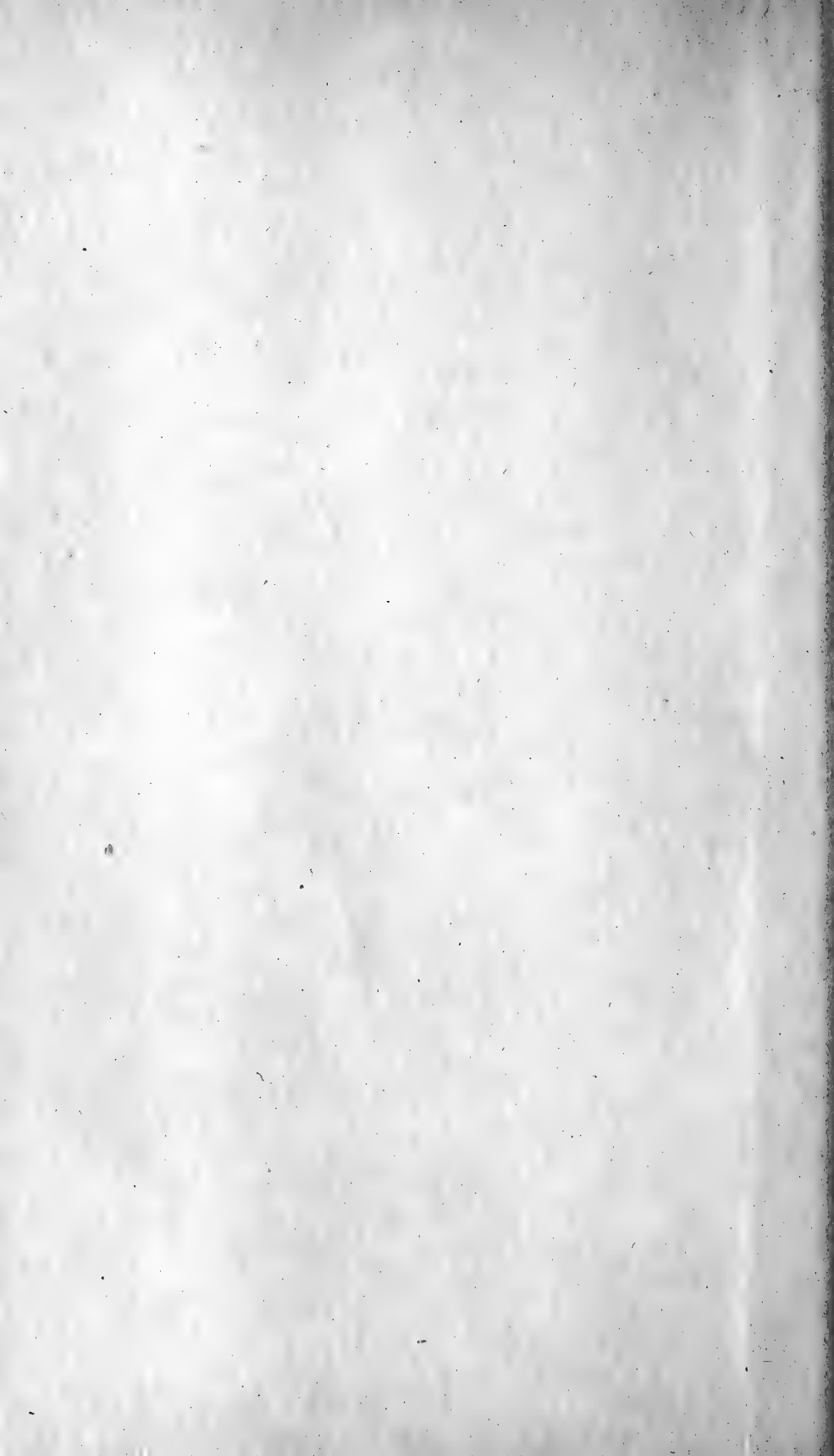
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The following descriptions are of some Dajidæ which were collected by the U. S. Bureau of Fisheries steamer *Albatross* during its cruise to the northwest Pacific Ocean in the summer of 1906. A new genus is added to the family, and *Holophryxus giardi* and *Holophryxus californiensis*, new species, are described.

The number of Dajidæ genera is rapidly increasing, so that the family now contains the following: *Dajus* Krøyer, *Notophryxus* Sars, *Aspidophryxus* Sars, *Heterophryxus* Sars, *Branchiophryxus* Caullery, *Prodajus* Bonnier, *Zonophryxus* Richardson, *Holophryxus* Richardson, and *Arthropryxus*, new genus.

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**HOLOPHRYXUS GIARDI**, new species.

Body of female oblong-ovate, 17 mm. by 39 mm., without any trace of segmentation. (See fig. 1.) Color uniformly light yellow.

Head represented by a bilobed prominence, which is surrounded by a wide, squarish ridge projecting anteriorly and laterally. Eyes wanting.

The thorax is wider anteriorly than posteriorly, being gradually restricted posteriorly. The lateral parts are not greatly swollen. There are no traces of segmentation on the dorsal surface.

The abdomen is narrower than the thorax, and tapers to a rounded extremity. There is no trace of segmentation, but a slight incision on either side indicates the place of coalescence of the first segment.

The abdomen is devoid of appendages, both uropoda and pleopoda being entirely wanting.

On the ventral side the oral area is not contracted behind. It is bounded anteriorly by the projecting ridge and mouth parts, and laterally by the two rows of coxal plates. Situated just within the two rows of coxal plates are five pairs

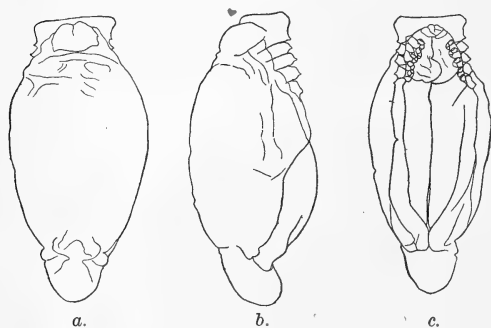


FIG. 1.—*HOLOPHRYXUS GIARDI*. ADULT FEMALE. a. DORSAL VIEW. b. LATERAL VIEW. c. VENTRAL VIEW.  $\times 2\frac{1}{2}$ .

of legs, surrounding the oral area. From the bases of the five pairs of legs arise five pairs of incubatory plates. Only the first and fifth pairs are visible, the other three pairs being hidden by the overlapping fifth pair. The fifth pair of plates are the largest, and meet along the middle ventral line of the body; they extend almost the entire length of the thorax.

In a lateral view four segments of the thorax are represented by four coxal plates, bounding the outer extremity of the oral area. The first coxal plate is coalesced with the cephalic ridge, but is indicated on either side at the posterior extremity of the ridge by a little pointed projection.

One adult female was taken by the U. S. Bureau of Fisheries steamer *Albatross* at Station 4793, Toporkov Island, Harbor of Nikolski, Bering Island, north  $58^{\circ}$  east, 44 miles ( $54^{\circ} 48'$  north,  $164^{\circ} 54'$  east), at a depth of 2,700 fathoms.

*Description of immature female.*—The body is oblong-ovate, 3 mm. by 8 mm., decreasing gradually in width from the anterior to the posterior extremity. (See fig. 3.)

The head is large and is surrounded anteriorly and laterally by a wide marginal border or ridge. There are no eyes. The three divisions of the body—the head, thorax, and abdomen—are well defined. The segments of the thorax are also well marked, the coxal plates occupying the lateral margins. There are six distinct segments, with six pairs of coxal plates. The first segment is coalesced with the head. The first coalesced segment bears the first pair of legs. The following five segments bear each a pair of legs, so that altogether there are six pairs of legs. The last free (sixth) segment bears a pair of modified appendages.<sup>a</sup>

The abdomen is narrower than the thorax, and tapers to a rounded extremity. It is unsegmented and is devoid of appendages.

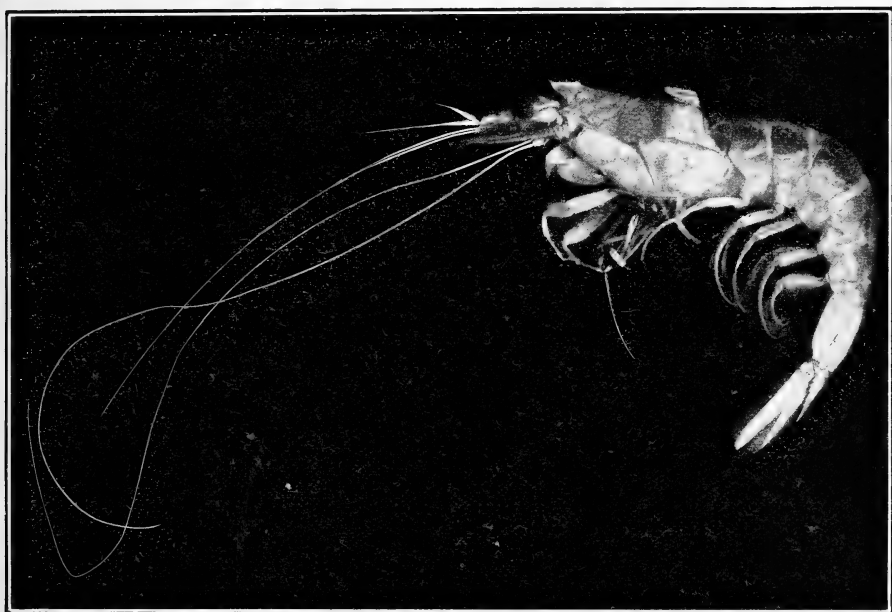


FIG. 2.—*HOLOPHRYXUS GIARDI*. IMMATURE FEMALE AND HOST.

Only one immature female was taken at Station 4793, Toporkov Island, Harbor of Nikolski, Bering Island, north  $58^{\circ}$  east, 44 miles ( $54^{\circ} 48'$  north,  $164^{\circ} 54'$  east), at a depth of 2,700 fathoms. It was attached to the dorsal surface of the carapace of the host, *Gennadas borealis* Rathbun, with the head directed posteriorly. The photograph (fig. 2) is of the immature female and its host.

<sup>a</sup> They may be analogous to or homologous with the fifth pair of appendages of *Heterophryxus appendiculatus* Sars. (*Challenger* Report, XIII, 1885, Pt. 37, pp. 220–221, pl. xxxviii, figs. 8–14.) See Tattersall for description and figures of this form. (Fisheries, Ireland, Sci. Invest., 1904, II, 1905, pp. 77–78, pl. xi, figs. 1–4.) Or, this segment may be considered the first abdominal segment with its appendages.

The adult female is about four and a half times longer than the immature female. The stage represented by the immature female must be a stage younger than the one described by G. O. Sars,<sup>a</sup> for *Dajus mysidis* Krøyer. It must be a stage intermediate between that and the cryptoniscian stage, because of the presence of the six pairs of legs. The stage represented by Sars has only five pairs of legs, as in the two succeeding stages and in the adult stage.

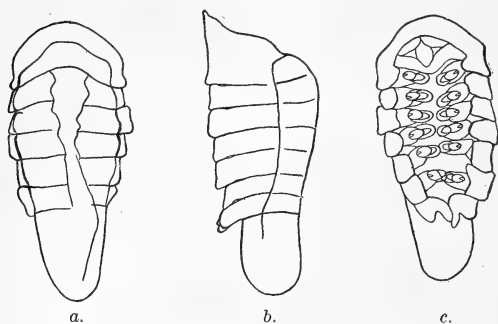


FIG. 3.—*HOLOPHRYXUS GIARDI*. IMMATURE FEMALE. a. DORSAL VIEW. b. LATERAL VIEW. c. VENTRAL VIEW.  $\times 14\frac{1}{2}$ .

that species; in having the head surrounded by a wide marginal squarish ridge or border anteriorly and laterally; in the difference in the shape and the position of the marsupial plates; and in having the first segment of the abdomen indicated by a slight incision on either side of the terminal segment.

The species is named for Prof. Alfred Giard.

The type from Toporkov Island, Bering Island, is in the U. S. National Museum, Cat. No. 38337.

#### *HOLOPHRYXUS CALIFORNIENSIS*, new species.

*Locality*.—One fine specimen of this interesting species was collected in Santa Barbara Channel, California, in green mud at a depth of 280 fathoms. It is described on the label which accompanies it as a parasite, but the host is not given. Its color in life is mentioned as being canary yellow.

Another specimen comes from Station 4753 on the way from Yes Bay to Seattle at Bushby Point at a depth of 150–280 fathoms. This adult female was attached. The photograph (fig. 4) shows the parasite attached to the dorsal side of the carapace of the host, *Pasiphaea pacifica* Rathbun with the head directed posteriorly. This species is similar to the preceding species in the elongated form of the body, but differs in lacking the wide anterior ridge, and in not

<sup>a</sup>Crustacea of Norway, II, 1899, pp. 223–224, pl. xciv, ♀ juv.<sup>2</sup>

having the first abdominal segment indicated by incisions in the lateral margins. It also has the anterior part of the body more strongly convex and not so depressed as in *H. giardi*.

One male accompanies the specimen from Santa Barbara Channel.

*Description of male.*—The male is about three times longer than wide, being 2 mm. in width and 6 mm. in length. The head is very

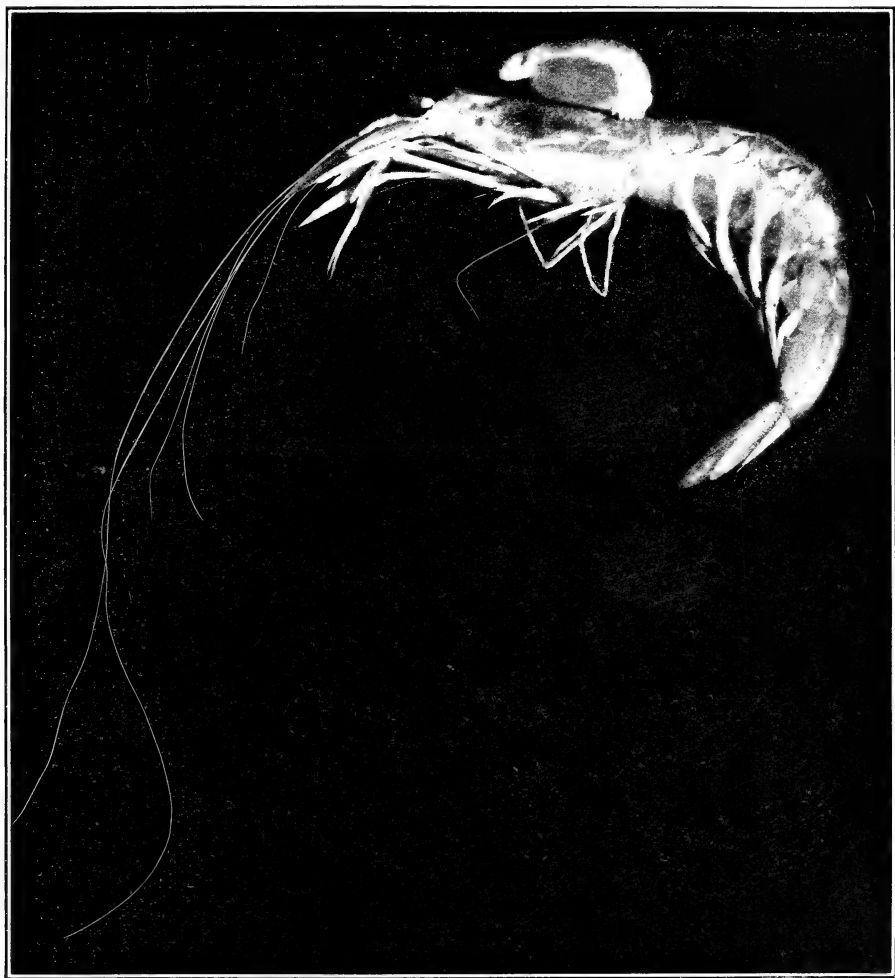


FIG. 4.—HOLOPHRYXUS CALIFORNIENSIS. ADULT FEMALE AND HOST.

large, rounded in front and completely fused with the first thoracic segment. There are no eyes. The first pair of antennæ are small and composed of only a few articles. The second pair of antennæ are rather long, extending to the posterior margin of the head, and are composed of about seven articles. The antennæ are inconspicuous from a dorsal view.

The six free segments of the thorax are distinctly separated from each other, are subequal in length, and are produced at the sides in rounded lobes. The seven pairs of legs are prehensile.

The abdomen is narrow, elongate, about twice as long as wide, with all the segments completely fused. There are no uropoda and no pleopoda. (See fig. 5.)

The type from Station 4753 has Cat. No. 38527, U.S.N.M.

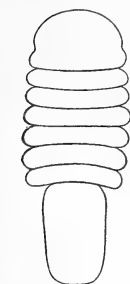


FIG. 5.—HOLO-  
PHYRYXUS  
CALIFORNIEN-  
SIS. MALE.  
× 20½.

The fact that these Dajidæ are found parasitic on shrimps, decapodous crustacea, and not on Schizopoda, the hosts on which they have previously been found, gives additional evidence, in respect to the relation of host and parasite, showing that families founded on such a basis, as well as genera and species, cannot be maintained. Giard and Bonnier have arranged a classification of the Epicaridea whereby the families of parasites are restricted to certain orders of hosts, but Sars has already pointed out the error of such an arrangement. The evidence furnished herein proves that one family of parasite can infest two different orders of host.

#### ARTHROPHYRYXUS, new genus.

Body of adult female irregular in outline, with lateral parts expanded, and not projecting in front of the head.

Head large and well defined from the thorax.

The middle part of the dorsal surface of the thorax segmented into five rather distinct segments.

The abdomen is also distinctly segmented into five segments, the terminal one being posteriorly triangular in shape.

There are no uropoda or pleopoda.

The oral area is small, rounded, but not greatly contracted behind. The five pairs of legs are closely crowded together, and are bounded by the five pairs of coxal plates. There are five pairs of incubatory lamellæ, the last pair being the largest, the two plates meeting along the middle ventral line.

The adult male has the head large, without eyes, the thorax composed of six distinct segments, the first being fused with the head. There are seven pairs of legs. The abdomen is indistinctly segmented into about six segments, the last one of which is minute and posteriorly triangular. The body is hunched and the abdomen considerably curved under the thorax.

There are no uropoda, and the pleopoda seem to be wanting.

The type of the genus is *Arthrop Fryxus beringanus*, the description of which follows:

ARTHROPHRYXUS BERINGANUS, new species.

The body of the adult female (fig. 6) is irregular in outline, oblong oval in shape, broadest in front, and slightly narrower behind. It is 14 mm. long and 9 mm. wide at its greatest breadth. The lateral parts of the body are expanded, but do not project beyond the head.

The head is very large, with the anterior margin irregular in outline and with a transverse fold about the middle. It is well defined from the thorax. There are no eyes.

The middle portion of the dorsal surface of the thorax is distinctly segmented into five segments.

The abdomen is distinctly segmented into five segments, the terminal one being minute and triangular in shape posteriorly.

There are no uropoda or pleopoda.

On the ventral side of the body the oral area is small, rounded, but not contracted behind. There are five pairs of legs, on the outside of which are the five pairs of coxal plates. Issuing from the bases of the five pairs of legs are the five pairs of incubatory lamellæ, partly overlapping each other, the last pair being the largest, meeting along the middle ventral line of the body.

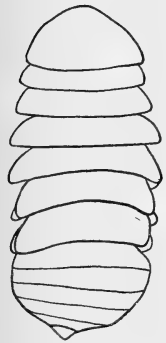


FIG. 7.—ARTHROPHRYXUS BERINGANUS. ADULT MALE.  $\times 41$ .

The adult male has the head large, without eyes, the thorax divided into six distinct segments, the first being fused with the head. There are seven pairs of prehensile legs, the first pair being attached to the first segment, which is coalesced with the head. The abdomen is indistinctly divided into about six segments, the last segment being minute and triangular posteriorly. (Fig. 7.)

There are no uropoda and apparently no pleopoda. Owing to the fact that the body is hunched and the abdomen is curved under the thorax, it was difficult to place the male in a position to draw the dorsal surface.

Only the female and one male were taken at Station 4793, Toporkov Island, harbor of Nikolski, Bering Island, north  $58^{\circ}$  east, 44 miles ( $54^{\circ} 48'$  north,  $164^{\circ} 54'$  east), at a depth of 2,700 fathoms. It is parasitic on *Eucopia australis* Dana.

The type is in the U. S. National Museum. Cat. No. 38338.

In the segmental character of the abdomen of the male this genus is closer to *Aspidophryxus* Sars than to any other of the Dajidæ

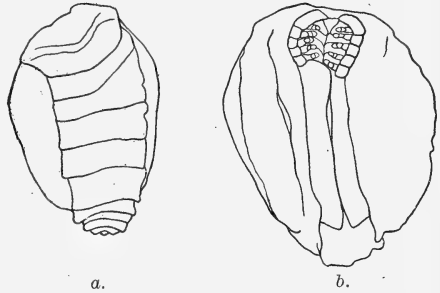
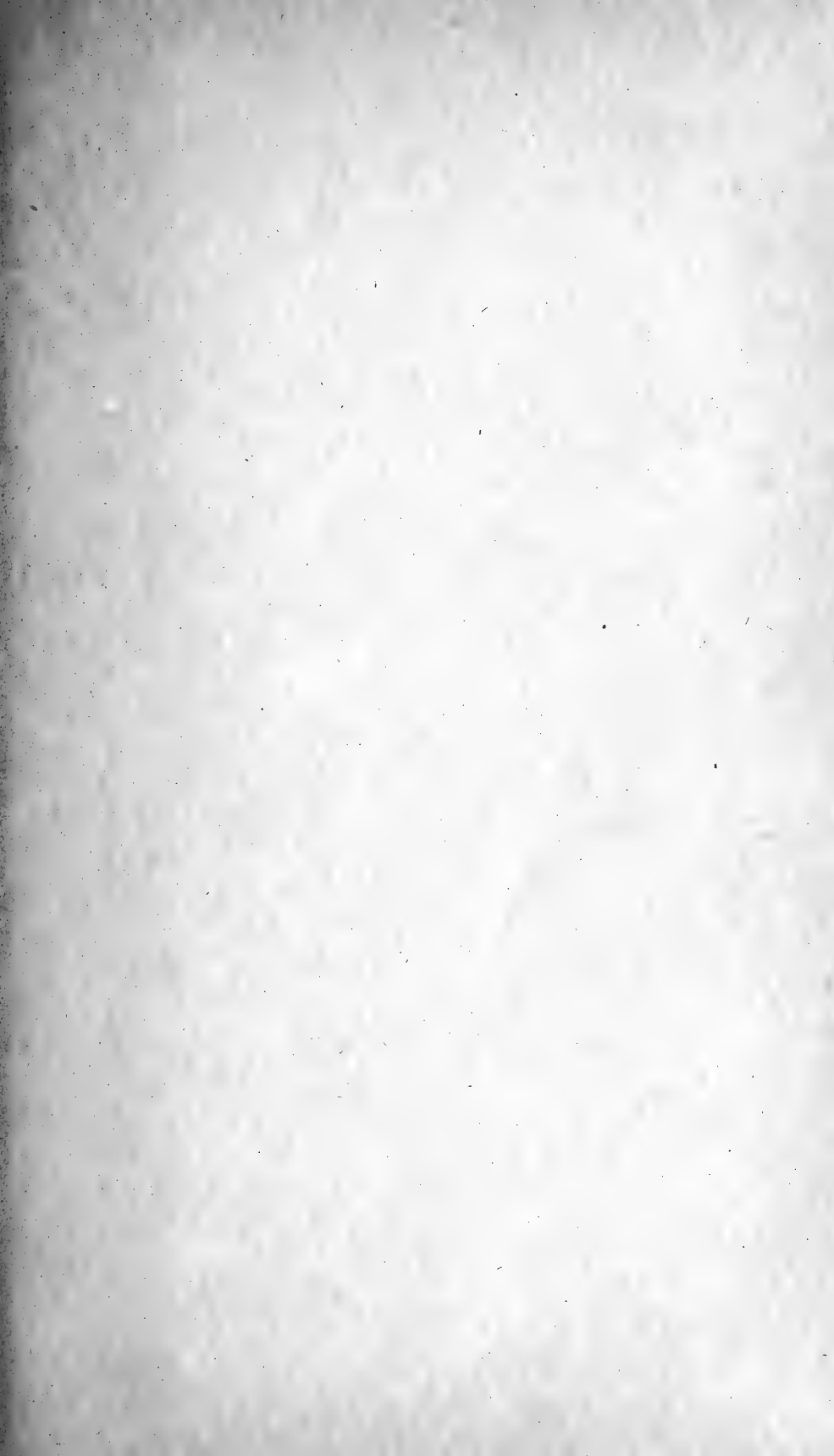


FIG. 6.—ARTHROPHRYXUS BERINGANUS. ADULT FEMALE. a. DORSAL VIEW. b. VENTRAL VIEW.  $\times 6\frac{1}{2}$ .

genera. The female differs from the female of *Aspidophryxus* in having the abdomen segmented, in the larger and differently shaped head, in not having the lateral parts of the thorax projecting in front of the head, and in having five pairs of incubatory plates, there being only one pair distinctly developed in *Aspidophryxus*.

Bonnier says of the male of *Prodajus lobiancoi* that the abdomen is "à peine segmenté sur les bords et terminé par une paire de longs uropodes digitiformes." Uropoda are also present in the male of *Aspidophryxus* Sars. The male of *Arthrophryxus* is without uropoda.







3

# THE PARASITIC ISOPOD LEIDYA DISTORTA (LEIDY) FOUND ON A NEW HOST

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

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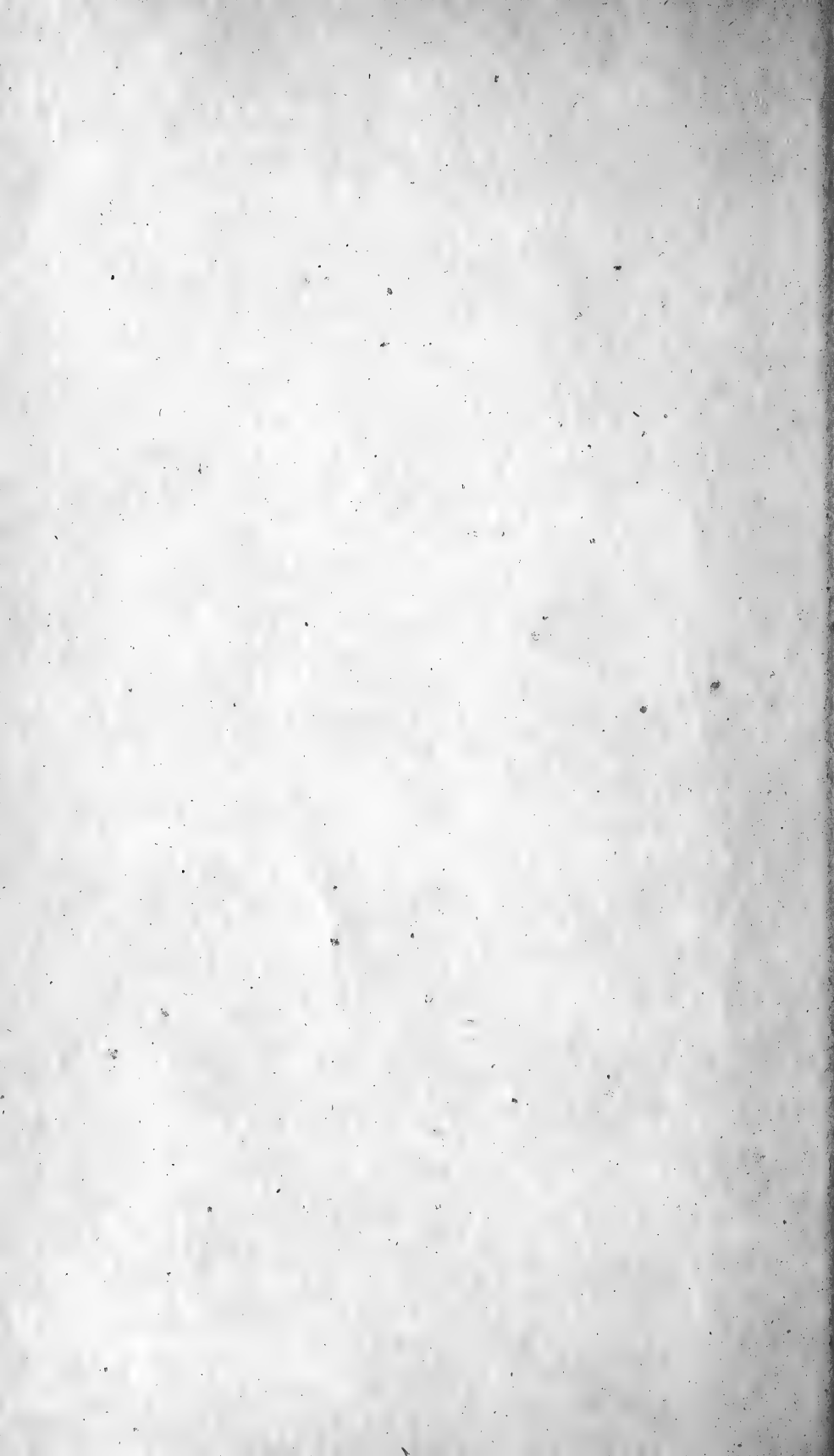
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# THE PARASITIC ISOPOD LEIDYA<sup>\*</sup> DISTORTA (LEIDY) FOUND ON A NEW HOST

BY

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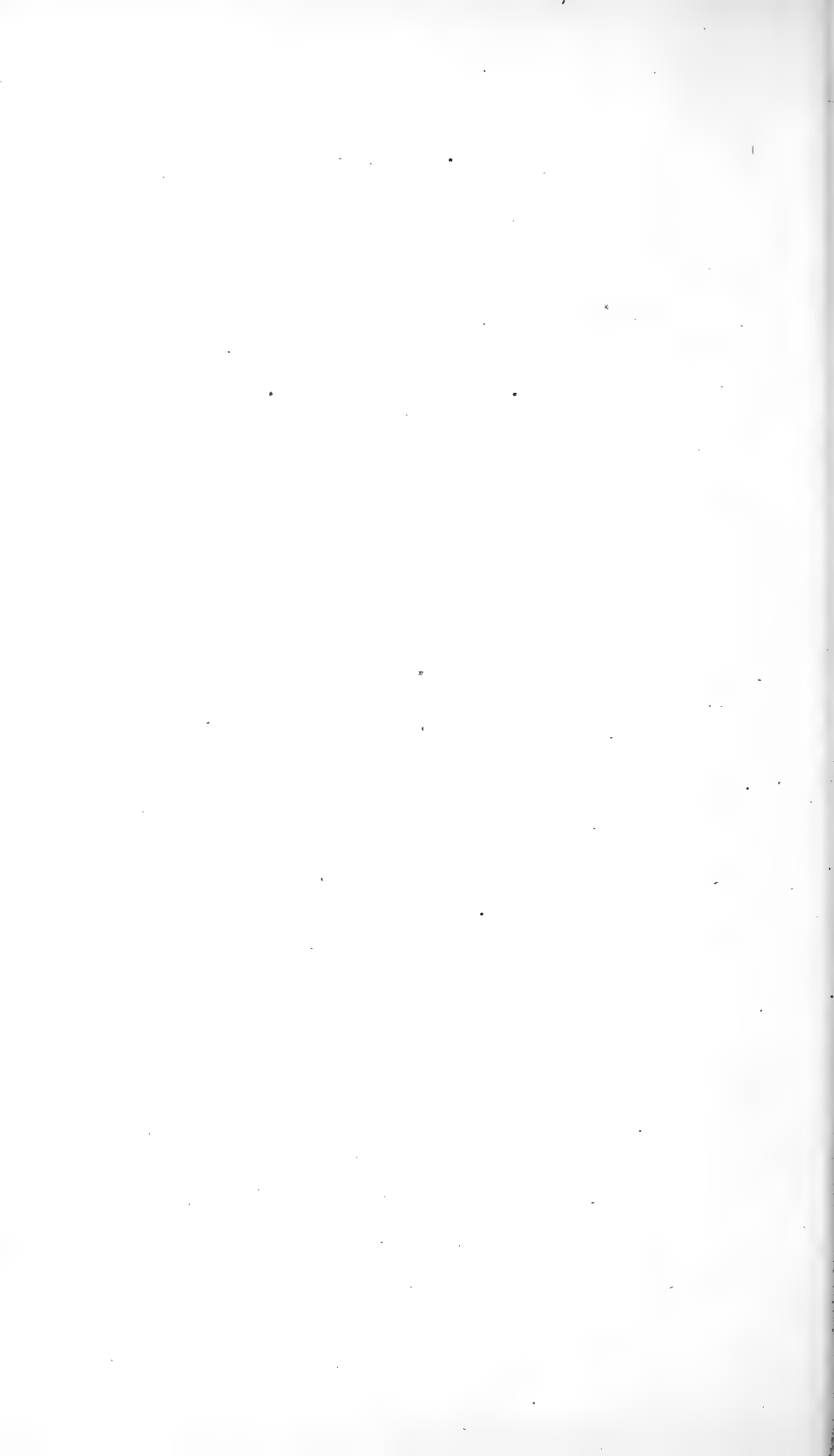
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## THE PARASITIC ISOPOD LEIDYA DISTORTA (LEIDY) FOUND ON A NEW HOST.

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By HARRIET RICHARDSON,

Collaborator, Division of Marine Invertebrates, U. S. National Museum.

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Prof. A. E. Verrill has recently sent me specimens from the Bermuda Islands of *Pachygrapsus transversus* (Gibbes), infested with an Isopod parasite. The parasite is located in the branchial cavity of the host. On examination the Isopod was found to be *Leidyia distorta* (Leidy), heretofore recorded as parasitic on *Uca pugilator* (Bosc). This genus and species is therefore not confined to one genus and species of host.

The species found by Fritz Mueller in the branchial cavity of a Grapsoid *Pachygrapsus transversus* (Gibbes), from the coast of Brazil, is probably this species and genus, and not *Grapsicepon fritzei*, the nominal species of Giard and Bonnier.<sup>a</sup>

Because *Grapsicepon edwardsi* was found on a Grapsoid, *Planes minutus*, according to the theory advanced by these authors the parasite of another Grapsoid of the same family, *Pachygrapsus transversus*, would naturally be a *Grapsicepon*. The facts prove, however, that this is not always the case, in this instance as in other parasitic Isopod genera before cited.

*Leidyia* is found parasitic on both *Uca* and *Pachygrapsus*, two widely separated genera of hosts belonging to different families.

As no descriptions or figures of this form have been given since those published by Leidy, the following descriptions and figures may be of interest, in that the young female is also described and figured for the first time:

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<sup>a</sup> Trav. du Labor. de Wimereux, V, 1887, p. 70, and VIII, 1900, p. 226.

## LEIDYA DISTORTA (Leidy).

*Cepon distortus* LEIDY, Jour. Acad. Nat. Sci. Phila., (2), III, 1855, p. 150, pl. XI, figs. 26-32.—HARGER, Report U. S. Fish Commission, Pt. 6, 1880, p. 311.—KOSSMANN, Zool. Ergeb. einer Reise in die Küst. des Rothen Meeres, III, Malacostraca, 1880, p. 122; Mittheil. aus der Zool. Station zu Neapel, III, 1881, first half, p. 182.—RICHARDSON, Am. Nat., XXXIV, 1900, p. 309.

*Leidya distorta* CORNALIA and PANCERI, Mem. R. Acad. Sci. Torino, (2), XIX, 1858-1861, p. 114.—GIARD and BONNIER, Trav. du Labor. de Wime-reux, V, 1887, p. 68, fig. 12.—RICHARDSON, Proc. U. S. Nat. Mus., XXIII, 1901, p. 579; Bull. U. S. Nat. Mus., No. 54, 1905, pp. 511-512.

*Localities*.—Atlantic City, New Jersey, on *Uca pugilator* (Bosc); Bermudas on *Pachygrapsus transversus* (Gibbes).

It is interesting to note that although *Leidya distorta* was first found at Atlantic City, New Jersey, its host, *Uca pugilator*, extends as far south as the coast of Florida, and the new host, *Pachygrapsus transversus*, extends as far north as the Florida coast, so that the continental ranges of the two hosts overlap.

*Description of female*.—Body rather irregular in outline, oblong-oval. Color yellow. (See figs. 1-2.)

Head large, bilobed, and with the front produced in a wide border or margin. Eyes wanting.

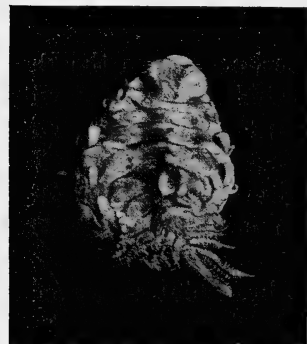


FIG. 1a.—LEIDYA DISTORTA. ADULT FEMALE (DORSAL VIEW).

First two segments of thorax short. The three following segments are the largest, and are subequal in length, about twice as long as the first; sixth a little shorter than fifth; seventh about half as long as sixth. The second, third, fourth, and fifth segments have in the middle of the dorsal part of the segment a squarish plate, which in the fifth segment has the outer edges considerably elevated, so as to form a longitudinal carina on either side, which extends posteriorly over the sixth segment. Coxal plates or epimera are present on the anterior portion of the lateral margin of all the segments, but are almost completely hidden by the large ovarian boss which projects upward in a large, prominent lobe. There are five pairs of incubatory plates, which



FIG. 2.—LEIDYA DISTORTA. ADULT FEMALE (VENTRAL VIEW).

<sup>a</sup> Figs. 1, 2, and 5 are from photographs taken in the U. S. National Museum. In the specimens photographed the pleural lamellæ and the pleopoda were bent, so that they do not appear as long as in Leidy's figures.



overlap each other on the ventral side, completely inclosing the marsupial cavity. The seven pairs of legs are small and feeble, the propodus and dactylus forming a prehensile hand.<sup>a</sup> (See fig. 3.)

The six segments of the abdomen are more or less coalesced in the middle of the dorsal surface. The lateral parts of each of the first five segments are produced into an elongate double-branched pinnate appendage on either side, so that altogether there are five pairs or ten pinnate appendages to the first five segments. The upper branches probably represent the pleural lamellæ and the lower branches the pleopods, so that, in this interpretation, there are five pairs of single-branched pleopoda and five pairs of single-branched pleural lamellæ. The sixth or terminal segment is furnished with a single pair of elongated pinnate appendages, the uropoda.

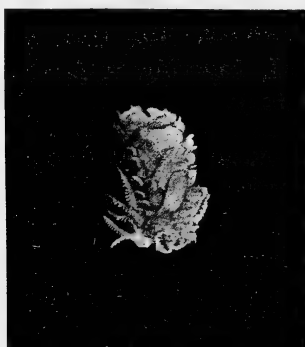
*Description of young female.*—The young female differs from the adult in its narrower and elongated form, in not having the thorax so



FIG. 3.—*LEIDYA DISTORTA*. LEG OF ADULT FEMALE.  $\times 52$ .



a



b

FIG. 4.—*LEIDYA DISTORTA*. YOUNG FEMALE. a, DORSAL VIEW; b, VENTRAL VIEW.

greatly distended, in the more equal length of the segments of the thorax, which do not have the median dorsal plate as in the adult, in having the segments of the abdomen more distinctly separated and the lateral appendages more elongated.

<sup>a</sup> Leidy mistook the prehensile hand for the "recurved, abortive hooklet." In some positions the hand has the appearance of a blunt hook and the dactylus is difficult to see. Leidy's figure is inaccurate and misleading. The article immediately preceding the "hooklet," in Leidy's figure, is probably the carpus and the merus combined. The line of separation between the two articles is somewhat difficult to see. Another interpretation might be given to Leidy's figure, the "hooklet" being the dactylus, the article preceding it, the propodus, and the one preceding that, the combined carpus, merus, and ischium.

The incubatory plates are much smaller than in the adult, and the marsupial pouch greatly reduced in size. The pouch is never filled with eggs at this stage. (See fig. 4.)

*Description of male.*—Body narrow, elongaté. Color yellow. (See fig. 5.)

Head but little wider than long; frontal margin straight, with antero-lateral angles rounded. Posterior portion somewhat wider than anterior. Eyes wanting. First pair of antennæ composed of three joints, second pair composed of seven, the last two being minute and tipped with hairs.

The seven thoracic segments are separated from each other by lateral incisions, so that the lateral margins are not continuous. There are seven pairs of prehensile legs.

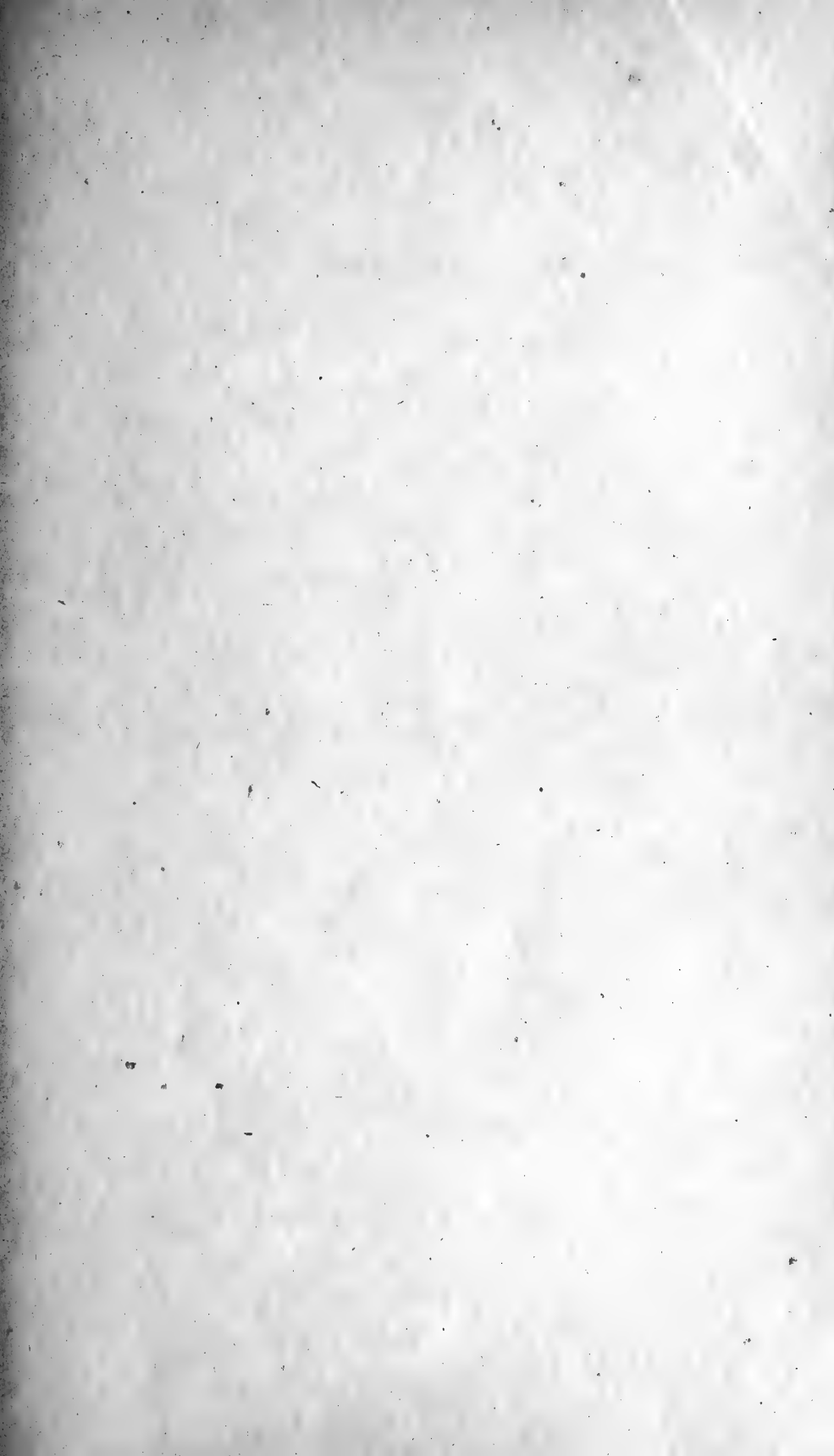
The six abdominal segments are perfectly distinct, are separated from each other by lateral incisions, and decrease gradually in width from the first to the sixth, which carries a pair of

FIG. 5.—LEIDYA DISTORTA. MALE.  $\alpha \times 23$ .



elongated, tapering appendages, the uropoda. The pleopoda are rudimentary.

<sup>a</sup> Some allowance must be made for Leidy's figures, which are somewhat diagrammatic.





4

# DESCRIPTION OF A NEW ISOPOD OF THE GENUS EURYCOPE FROM MARTHAS VINEYARD

BY

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Collaborator, Division of Marine Invertebrates, U. S. National Museum

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# DESCRIPTION OF A NEW ISOPOD OF THE GENUS EURYCOPE FROM MARTHAS VINEYARD

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# DESCRIPTION OF A NEW ISOPOD OF THE GENUS EURYCOPE FROM MARTHAS VINEYARD.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

Two specimens of a new species of *Eurycope* were obtained by the U. S. Bureau of Fisheries steamer *Albatross* in 1884 off Marthas Vineyard, as well as one from Georges Bank. These specimens have been in the Peabody Museum at New Haven, Connecticut, but have recently been transferred to the U. S. National Museum collection.

References to the literature may be found on pages 701-717 of my Monograph on the Isopods of North America, Bulletin 54, U. S. National Museum, with the exception of the following, which has been published recently:

The Marine Fauna of the coast of Ireland, Pt. 5, Isopoda, by W. M. Tattersall. Fisheries, Ireland, Sci. Investigations, 1904, II, 1905, pp. 72-75, pl. x, Dublin.

The description of the form follows:

## EURYCOPE TRUNCATA, new species.

Body oblong-ovate, a little more than twice as long as wide. Dorsal surface smooth.

The head is wider than long, and is produced anteriorly in a truncate process which extends between the basal articles of the first pair of antennæ. On either side of the median process there is a slight double emargination. The eyes are wanting. The first pair of antennæ have the basal article large and dilated. There is a large and conspicuous spine on the inner margin. The second and third articles are small and feeble, and of equal length. The flagellum extends to the end of the fourth article of the peduncle of the second antennæ, and is composed of about seven articles. The second antennæ have the basal article short and furnished with a long, conspicuous spine on the outer margin.

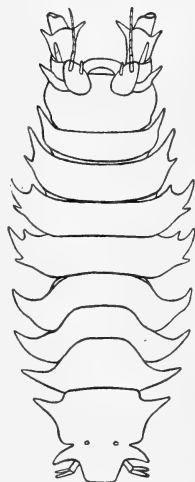


FIG. 1.—EURYCOPE  
TRUNCATA  $\times 14\frac{1}{2}$ .

The second article is about twice as long as the first, and is furnished on the anterior margin with one long spine. The third article is about as long as the second, and has two spines, one on the outer and one on the inner margin. The fourth article is short, and is not furnished with any spines. The last two articles of the peduncle and the flagellum are missing. The mandibles have a well developed palp and molar process.

The first four segments of the thorax are about equal in length.

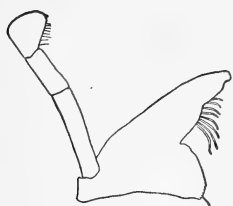


FIG. 2.—EURYCOPE TRUNCATA. RIGHT MANDIBLE  $\times 51\frac{1}{2}$ .

The antero-lateral angles of the first segment are drawn out on either side in one long, sharp epimeral spine. The lateral margins of the second segment are drawn out on either side in one long, sharp spine and one small spine just back of it, both epimeral. The lateral margins of the third and fourth segments are produced on either side in three spines, two small spines and one long, sharp median one, a little curved anteriorly.

The last two spines are epimeral. The last three segments have the lateral margins produced on either side in one long, sharp spine directed anteriorly. The fifth and sixth segments are of nearly equal length in the median dorsal line. The seventh segment is nearly twice as long as either of the preceding segments.

The abdomen is composed of one segment. Near the base of the segment the lateral margin is produced on either side in one long, sharp spine directed anteriorly. Below these spines the lateral margins are almost straight to about the middle of the segment, where there is an abrupt indentation on either side. This indentation is followed by two long, sharp spines, one on either side, directed posteriorly. Below these two spines the lateral margins slightly converge to a truncate extremity. Just within the two indentations of the lateral margin are indications of two tiny tubercles on the dorsal surface. The uropods are placed on either side of the truncate extremity just below the second lateral spine. They are small and feeble and consist of a basal article and two branches of nearly equal length.



FIG. 3.—EURYCOPE TRUNCATA. LEG OF FIFTH PAIR  $\times 27\frac{1}{2}$ .

All the four anterior pairs of legs are missing. The three posterior pairs are similar, natatory, with the merus much enlarged and both the merus and propodus furnished with long, plumose hairs.

The operculum of the female is furnished with a small spine about the middle.

Only two specimens, both females, were taken by the U. S. Bureau of Fisheries steamer *Albatross* in 1884, off Marthas Vineyard at a depth of 1,525 fathoms in gray ooze, and one specimen, also a female, from southeast of Georges Bank at a depth of 1,769 fathoms. These specimens have been heretofore in the collection of the Peabody Museum at Yale University, and have recently been placed in the collection of the U. S. National Museum, where they have Cat. No. 38528.

This species differs from *Eurycope fragilis* Beddard,<sup>a</sup> *Eurycope atlantica* Beddard, and *Eurycope caribbea* Benedict,<sup>b</sup> the forms to which it is most closely allied in the truncated character of the extremity of the terminal segment and in the absence of spines on the dorsal surface of the body.

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<sup>a</sup> Challenger Report, XVII, 1886.

<sup>b</sup> Proc. U. S. Nat. Mus., XXIII, 1901.







# DESCRIPTION OF A NEW ISOPOD GENUS OF THE FAMILY DAJIDÆ

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

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No. 1618.—From the Proceedings of the United States National Museum,  
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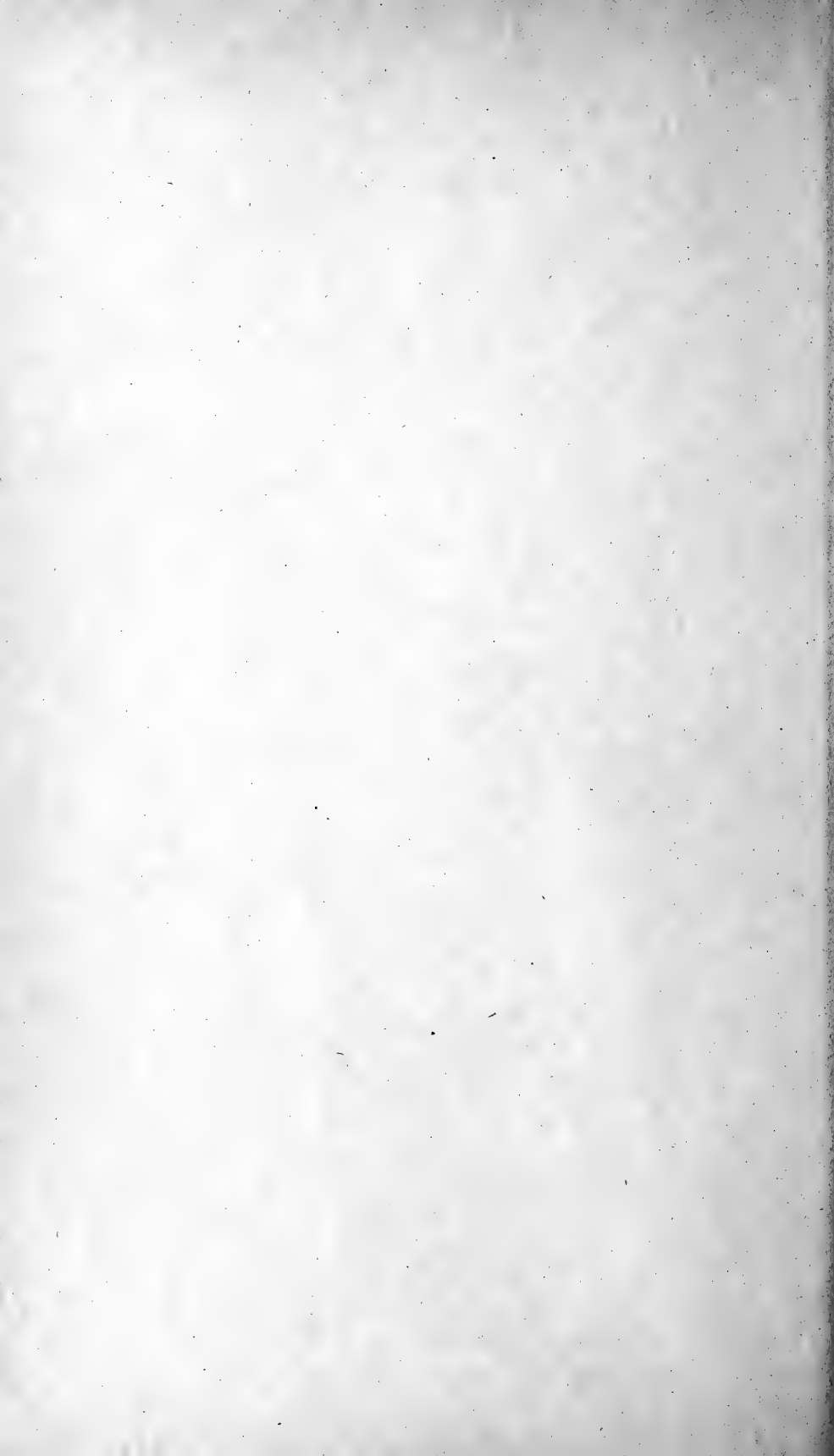
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# DESCRIPTION OF A NEW ISOPOD GENUS OF THE FAMILY DAJIDÆ

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

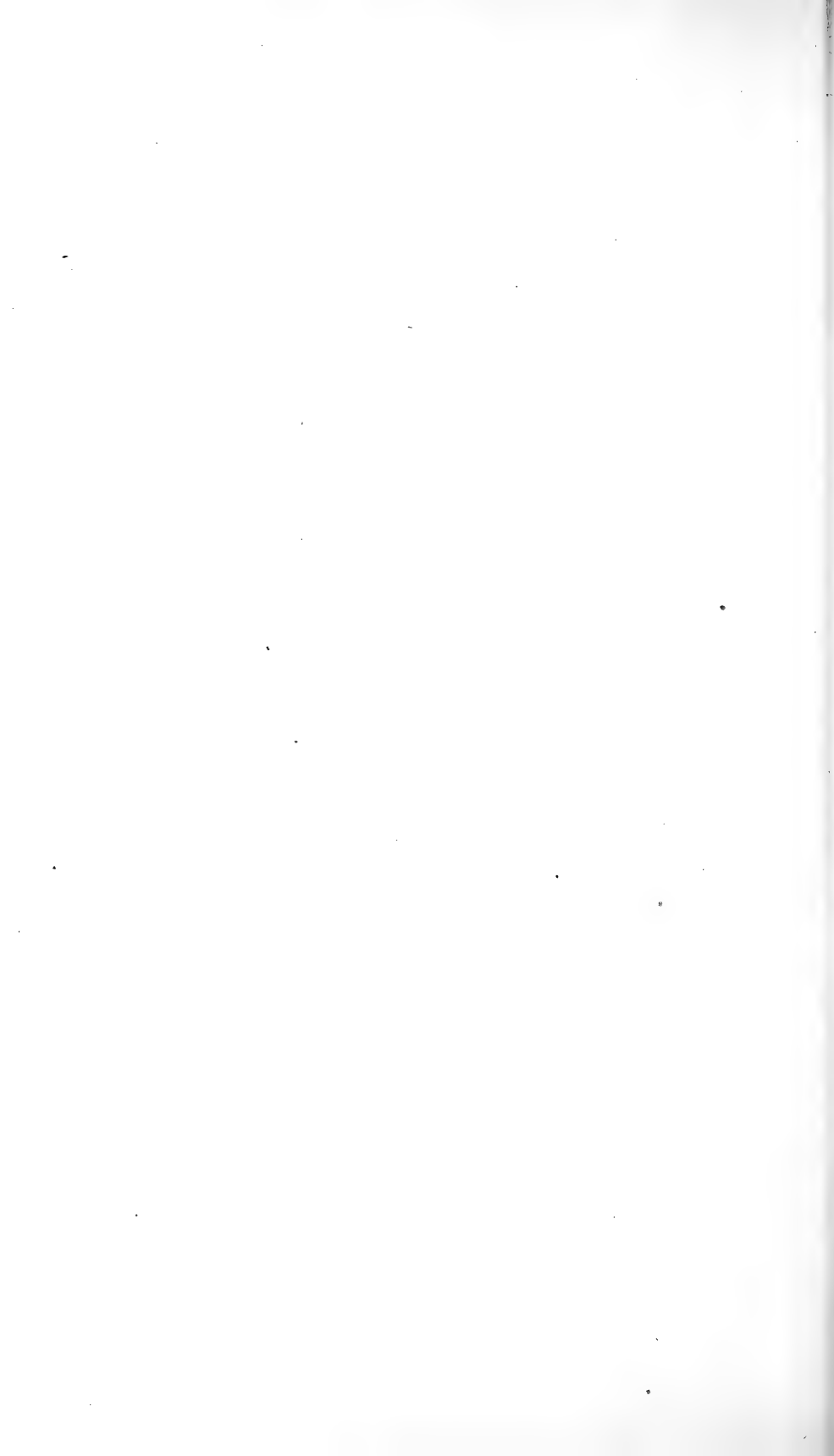
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## DESCRIPTION OF A NEW ISOPOD GENUS OF THE FAMILY DAJIDÆ.

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By HARRIET RICHARDSON.

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During the summer of 1884, the U. S. Bureau of Fisheries steamer *Albatross* collected a curious isopod off the south coast of Long Island at a depth of 707 fathoms. The specimen has been in the Peabody Museum, Yale University, until recently, when it was transferred to the collections of the U. S. National Museum. This form represents a new species and genus of Dajidæ.

### COLOPHRYXUS, new genus.

Body of adult female, somewhat depressed, with the cephalic part projecting in front, and the lateral parts swollen, but not expanded anteriorly and not projecting in front of the head.

Middle part of dorsal surface distinctly segmented into five segments.

Abdomen without any trace of segmentation and triangularly produced posteriorly in an obtuse point.

The abdomen is without appendages, both uropoda and pleopoda being entirely absent.

There are five pairs of legs, closely crowded around the oral area.

Oral area small, rounded, and contracted behind. It is bounded laterally by the four pairs of coxal plates.

The male has the head and first segment of the thorax fused. The following six segments of the thorax are distinct and subequal. The abdomen is indistinctly segmented into about six segments. There are no uropoda or pleopoda.

The *type* of the genus is *Colophryxus novangliæ*, the description of which follows:

### COLOPHRYXUS NOVANGLIÆ, new species.

*Description of adult female.*—Body of adult female somewhat oval in outline, contracted anteriorly in the cephalic region and broadening posteriorly.

The cephalic part is large and projects far in front, being produced anteriorly in a wide marginal border.

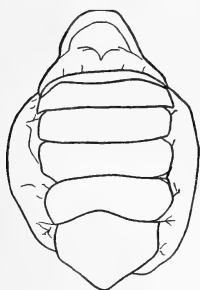


FIG. 1.—*COLOPHRYXUS*  
NOVANGLIÆ. ADULT  
FEMALE. DORSAL  
VIEW. X 7½.

The middle portion of the thoracic region is segmented into five distinct segments, the first of which is much shorter than any of those following. The lateral parts are tumid, but not greatly swollen, and do not project anteriorly beyond the limits of the thorax, nor posteriorly quite to the extremity of the abdomen.

The abdomen is entirely unsegmented, without any traces of segmentation and is devoid of appendages. It is large and triangularly produced posteriorly with the apex obtuse. (See fig. 1.)

On the ventral side the oral area is small, rounded, and contracted behind. The five pairs of legs are small, and closely crowded together. They are bounded laterally by the four pairs of coxal plates. (See fig. 2.)

*Description of male.*—The male has the head and first thoracic segment fused. The following six segments are subequal. The abdomen is indistinctly segmented into five or six segments. There are apparently no pleopoda or uropoda. (See fig. 3.)

Owing to the scarcity of material, a more detailed description can not be given.

Only one female and one male were collected by the U. S. Bureau of Fisheries steamer *Albatross* off the South coast of Long Island at Station 2235 at a depth of 707 fathoms. They were found in the trawl wings. The host is unknown.

The type is in the U. S. National Museum and is Cat. No. 38958.

In the indistinct segmentation of the abdomen of the male this genus is more closely related to *Aspidophryxus* Sars,<sup>a</sup> *Prodajus* Bonnier, and *Arthrop Fryxus* Richardson<sup>b</sup> than to the other genera of Dajidæ. The absence of pleopoda brings it closer to *Arthrop Fryxus*. The female, however, differs from the female of *Arthrop Fryxus* in the unsegmented abdomen.



FIG. 2.—*COLOPHRYXUS*  
NOVANGLIÆ. ADULT  
FEMALE. VENTRAL  
VIEW. X 7½.



FIG. 3.—*COLOPHRYXUS*  
NOVANGLIÆ. MALE  
X 27½.

<sup>a</sup> Crust. of Norway, II, 1899, pp. 227–228.

<sup>b</sup> Proc. U. S. Nat. Mus., XXXIII, 1908, pp. 695–696.





SOME NEW ISOPODA OF THE SUPERFAMILY  
ASELLOIDEA FROM THE ATLANTIC  
COAST OF NORTH AMERICA

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

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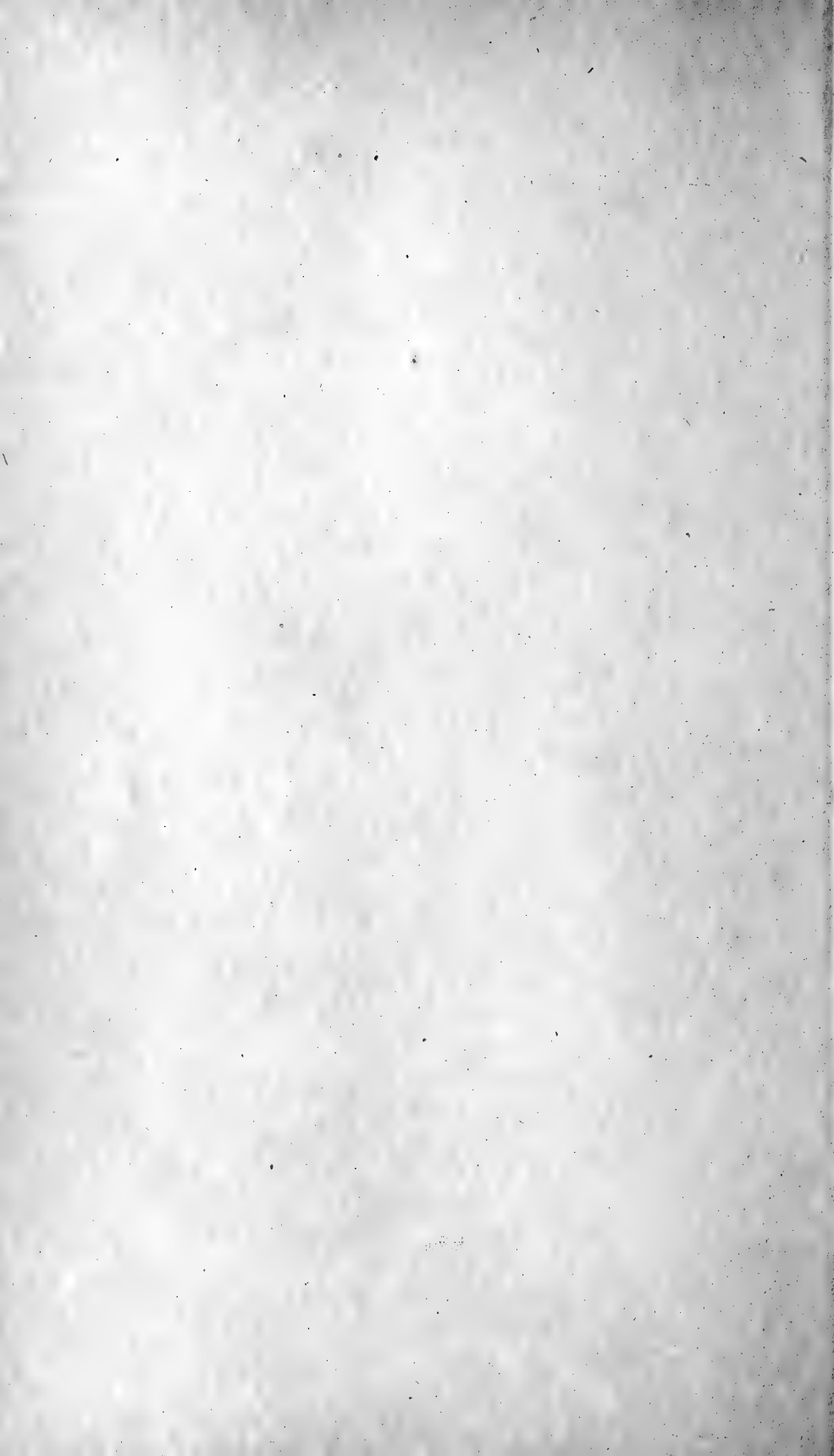
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SOME NEW ISOPODA OF THE SUPERFAMILY  
ASELLOIDEA FROM THE ATLANTIC  
COAST OF NORTH AMERICA

BY

HARRIET RICHARDSON

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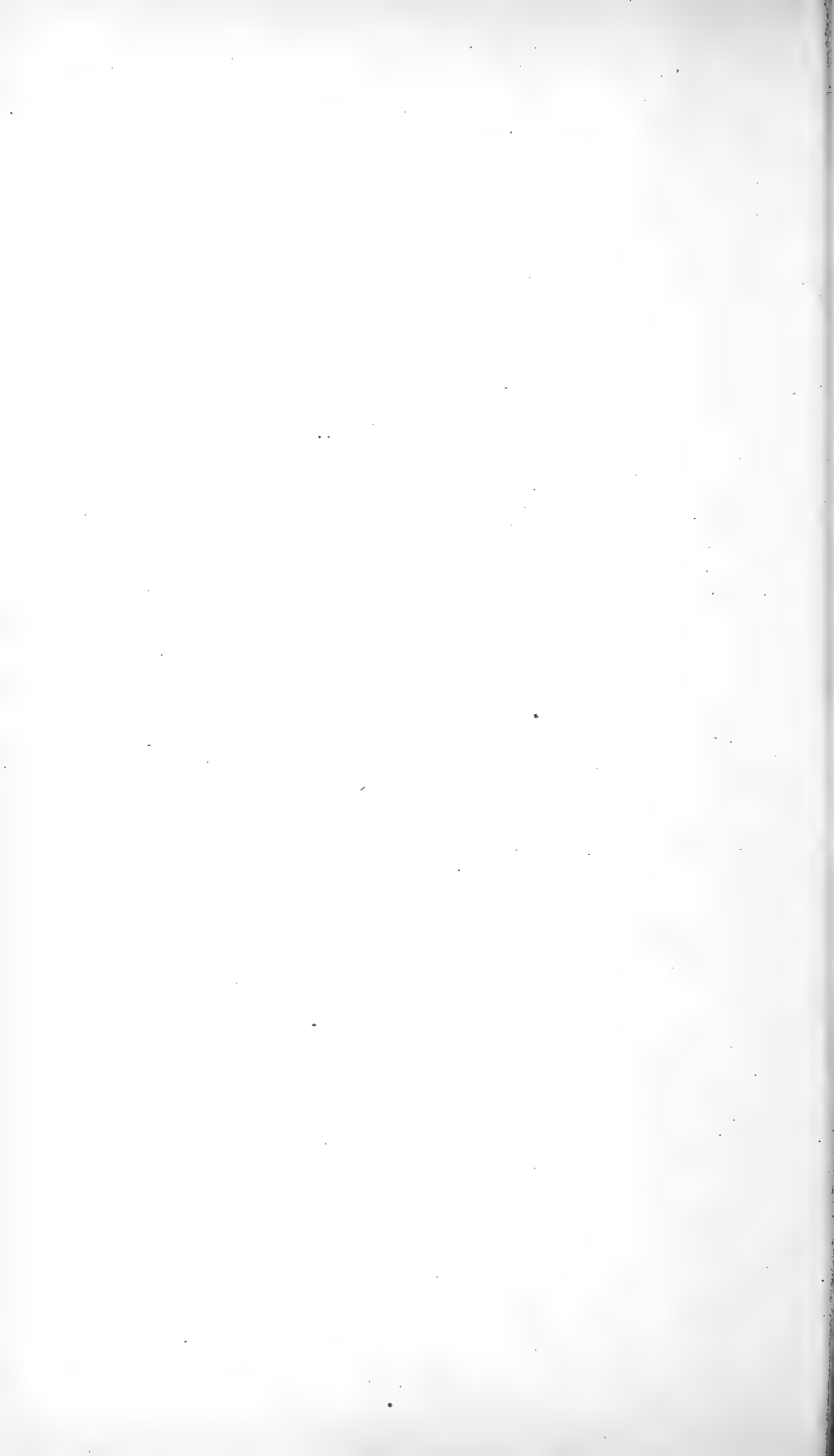
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1908



# SOME NEW ISOPODA OF THE SUPERFAMILY ASELOIDEA FROM THE ATLANTIC COAST OF NORTH AMERICA.

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By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

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In the U. S. Bureau of Fisheries collection recently received by the U. S. National Museum from Prof. A. E. Verrill, Yale University Museum, are a number of new and interesting forms belonging to the superfamily Aselloidea. Several new genera belong to the families, Janiridæ and Desmosomidæ, and also a new species of *Eurycope*, are herein described.

## Family JANIRIDÆ.

Genus IOLELLA Richardson, 1903.

IOLELLA GLABRA, new species.

Body oblong-ovate, about twice as long as wide; surface of body without spines or tubercles.

Head much wider than long with the front produced in the middle in a long rostrum, which is about as long as the length of the head; the antero-lateral angles are also produced in acute, triangular processes, which are about half as long as the rostrum. The eyes are small, round, composite, and are placed halfway between the lateral margin and the median longitudinal line and halfway between the anterior and posterior margins of the head. The first pair of antennæ have the first two articles of the peduncle about equal in length; the third article is about half as long as the second; the flagellum, which consists of twenty-four articles, extends a little beyond the fifth article of the peduncle of the second pair of antennæ. The second pair of antennæ have the first two articles of the peduncle very short; the third article is equal in length to the first two taken together, and is furnished on the exterior margin with an antennal scale; the fourth article is also short; the fifth and sixth articles are elongate and are about equal in length; the flagellum is long and is composed of nearly one hundred articles.

The first segment of the thorax has the lateral margins produced in one triangular process on either side, directed anteriorly; the second, third, and fourth segments are each produced on either side in two triangular processes, one anterior and the other posterior; the last three segments have the lateral margins produced on either side in one long process directed posteriorly, with a rudimentary posterior process indicated on the posterior margin.

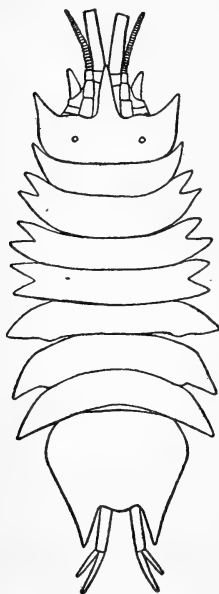


FIG. 1.—*IOLELLA GLABRA*.

The abdomen has the post-lateral angles produced in one long acute triangular process on either side of a small median rounded lobe. The uropods have the basal article about equal in length to the post-lateral angles of the abdomen; the inner branch is almost as long as the basal article; the outer branch is a little shorter.

The first pair of legs are prehensile; all the others are ambulatory and furnished with bi-unguiculate dactyli.

The single specimen is a male, and comes from Station 2116, off Cape Hatteras. It was collected at a depth of 888 fathoms in blue mud and fine sand by the U. S. Bureau of Fisheries' steamer *Albatross*.

The type is in the U. S. National Museum. Cat. No. 38963.

This species is very similar to *Iolella spinosa* (Harger), and differs chiefly from that species in lacking spines on the dorsal surface of the body.

#### Genus RHACURA, new.

Head without rostrum, but with a triangular median frontal process. Lateral margins of head with two triangular processes; eyes small, but distinct. First pair of antennae with a peduncle of three articles and a multi-articulate flagellum; second pair of antennae with the third article of the peduncle furnished with an antennal scale.

First and fourth thoracic segments with one lateral process on either side; second, third, fifth, and sixth segments with two lateral processes; seventh thoracic segment with three lateral processes.

Abdomen furnished with four lateral triangular processes on either side.

Legs as in the genus *Iolella*.

This genus differs from *Acanthaspidia* Stebbing,<sup>a</sup> the type of which is *Acanthaspidia typhlops* (Sars),<sup>b</sup> in the presence of eyes,

<sup>a</sup> *Acanthaspidia* Stebbing = *Acanthoniscus* Sars, Hist. Crust., 1893, p. 378.

<sup>b</sup> Norwegian North-Atlantic Expedition, XIV, Zoology, Crust., I, 1885, pp. 119-121, pl. x, figs. 27-30.

in having the first pair of legs prehensile, and not similar to the following pairs as in that genus, in having the legs furnished with bi-unguiculate dactyli; in not having a bifurcate rostrum, in having the fourth thoracic segment produced laterally in one process and not two, in having the fifth and sixth thoracic segments produced laterally in two processes and not three, in having the lateral margins of the abdomen produced in four large processes and not eight as in that genus.

It differs from *Iolanthe* Beddard<sup>a</sup> in the presence of eyes, in having the first pair of legs prehensile, and not similar to the succeeding pairs as in that genus, in having the fourth thoracic segment produced laterally in one process and not two, as in both species of *Iolanthe*, *I. acanthonotus* Beddard, and *I. decorata* Hansen,<sup>b</sup> in having the fifth and sixth segments produced in two processes laterally and the seventh segment in three, and not as in the two species mentioned in which the lateral margins of the fifth, sixth, and seventh segments are produced in one long spine. In the genus *Rhacura* the lateral margins of the abdomen are produced in four processes, while in *I. acanthonotus* there are three long processes and in *I. decorata* there are eight short ones.

This genus differs from *Ianthopsis* Beddard<sup>c</sup> in having the first pair of legs prehensile and not similar to the succeeding pairs as in that genus, in having the first and fourth thoracic segments produced laterally in one process and not two, in having the fifth and sixth segments produced in two processes, the seventh in three, and not as in *Ianthopsis bovallii* (Studer),<sup>d</sup> which has the last three thoracic segments produced laterally in one long process, and in having four long processes on the lateral margins of the abdomen and not rudimentary ones as in that genus.

This genus seems closer to *Iolella*<sup>e</sup> Richardson than to any of the genera referred to above. It differs, however, in having the rostrum reduced to a triangular expansion, in having two lateral processes to the head instead of one, in having one lateral process to the fourth thoracic segment instead of two, in having two lateral processes to the fifth and sixth segments and three to the seventh segment, while in *Iolella* there is one process to each of these segments, and in having four triangular processes to the lateral margin of the abdomen instead of one post-lateral process as in *Iolella*.

<sup>a</sup> Challenger Report, Zool., XVII, Pt. 48, Report on the Isopoda, Pt. 2, 1886, pp. 15–18, pl. iv, figs. 9–14; pl. v, figs. 1–4.

<sup>b</sup> Plankton Expedition, II, 1895, pp. 6–7, pl. i, figs. 1–1e.

<sup>c</sup> Challenger Report, Zool., XVII, Pt. 48, Report on the Isopoda, Pt. 2, 1886, p. 15, pl. v, fig. 5.

<sup>d</sup> Abh. k. Akad. Wiss. Berlin, 1883, pp. 10–12, pl. i, fig. 2.

<sup>e</sup> Bull. U. S. Nat. Mus., No. 54, 1905, p. 457 (footnote).

The differences between *Rhacura* and *Iolella* are greater than those between *Iolanthe* and *Acanthaspidia* and seem to warrant keeping them apart.

*Type of the genus.*—*Rhacura pulchra*, new species.

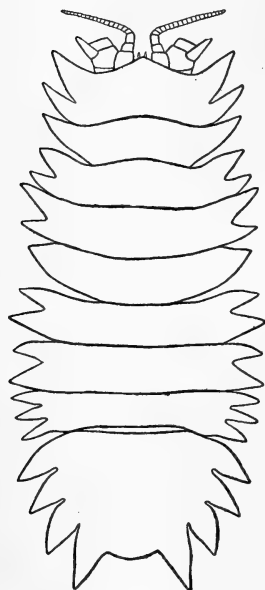


FIG. 2.—RHACURA PULCHRA.

RHACURA PULCHRA, new species.

Body oblong-ovate, about twice as long as wide. Dorsal surface covered with granulations.

Head much wider than long, with the front produced in the middle in an obtuse triangular process, which does not extend as far as the antero-lateral processes; the lateral margins are drawn out on either side in two acute triangular processes, both directed anteriorly; the posterior one is slightly narrower than the anterior process. The eyes are minute and are situated closer to the posterior margin than to the anterior margin. The first pair of antennæ have the first article of the peduncle largest; the second and third are subequal and are a little shorter than the first; the flagellum is composed of eighteen articles. The second pair of antennæ are broken at the fourth article of the peduncle in the only specimen; the third article is furnished with an antennal scale. The maxillipeds have the first three articles of the palp expanded and dilated.

The first segment of the thorax has the lateral margins drawn out on either side in one triangular expansion, acute at the extremity and directly anteriorly; the second and third segments have the lateral margins drawn out on either side in two triangular expansions, about equal in width, one anterior and the other posterior; the fourth segment has one triangular expansion to the lateral margin on either side; the fifth and sixth segments have the lateral margins drawn out on either side in two triangular expansions of about equal size; the seventh and last segment of the thorax has the lateral margins drawn out in three triangular processes on either side, all of equal size.

The abdomen has the lateral margins drawn out on either side in four triangular expansions, the last expansion corresponding to the post-lateral expansion in the species of the genus

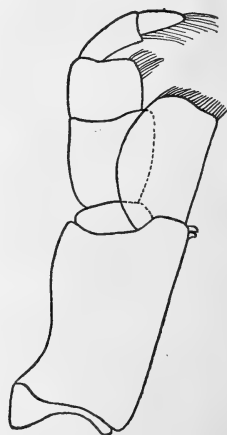


FIG. 3.—RHACURA PULCHRA. MAXILLIPED.

*Iolella*; between the post-lateral expansions is a small rounded lobe. The uropoda are lost in the only specimen.

The first pair of legs are prehensile, the other six ambulatory in character and furnished with bi-unguiculate dactyli. The margins of the entire body are armed with minute acute spinules.

The only specimen, a female, was found at Station 2572, steamer *Albatross*, southeast of Georges Bank, at a depth of 1,769 fathoms.

The type is in the U. S. National Museum, Cat. No. 38964.

Genus HAPLONISCUS, new.

Head without rostrum. First pair of antennæ with the peduncle composed of only two articles; flagellum composed of several articles; second antennæ with the peduncle composed of six articles, the third article furnished with an antennal scale. Eyes absent.

Terminal segment of body with posterior median lobe, on either side of which is a small triangular process; uropoda small, consisting of a single article.

The legs are all ambulatory, similar, with dactylus uni-unguiculate. They are alike in both sexes.

This genus differs from *Nannoniscus* Sars, its closest ally, in lacking the large median lobe of the head, in not having an olfactory papilla to the first antenna, in the differently shaped abdomen, and in having the uropoda composed of a single article and not double-branched as in that genus.

The type of the genus is *Nannoniscus bicuspis* Sars.<sup>a</sup> In 1899, Sars admitted that this species was not congeneric with the type species of the genus *Nannoniscus*, but allowed it to remain there.

The following species also belongs to this genus and is very similar to Sars's species.

HAPLONISCUS EXCISUS, new species.

Body oblong-ovate, a little less than twice as long as wide. Color in alcohol whitish. Surface smooth.

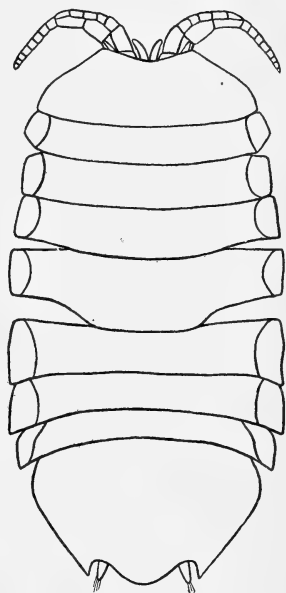


FIG. 4.—HAPLONISCUS EXCISUS.

<sup>a</sup> Norwegian North-Atlantic Expedition, XIV, Zoology, Crustacea, I, 1885, pp. 122-123.

Head wider than long, with the anterior margin slightly excavate between the antero-lateral angles; the head is wider posteriorly than anteriorly. There are no eyes. The first pair of antennæ have the first article of the peduncle short. The second article is much longer; the flagellum is composed of five articles and extends to the end of the peduncle of the second antennæ. The first four articles of the second antennæ are short; the last two are longer and subequal; the third article of the peduncle is furnished with an antennal scale; the flagellum is composed of eight articles.

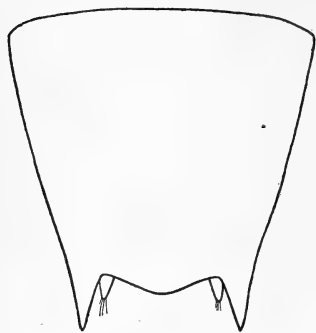


FIG. 5.—HAPLONISCUS RETROSPINIS. ABDOMEN OF FEMALE. (DORSAL VIEW.)

The first three segments of the thorax are about equal in length; the fourth segment is the longest and especially long in the middle region; the fifth and sixth segments are about equal in length, and are shorter than the fourth; the last segment is shorter than either of the two preceding segments; the lateral margins of all the segments are straight, the epimera occupying the entire lateral part of the segment.

The abdomen consists of a single segment, the lateral margins of which converge gradually to the posterior extremity, which has a large rounded median lobe, on either side of which

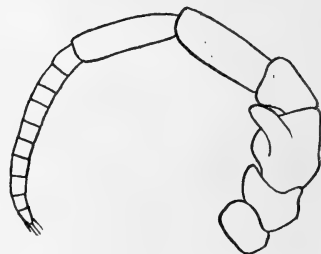


FIG. 6.—HAPLONISCUS RETROSPINIS. (SECOND ANTENNA.)

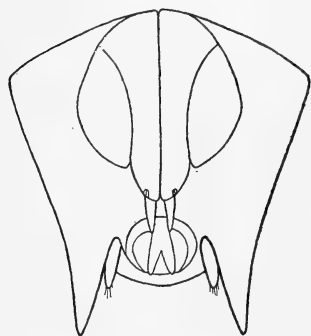


FIG. 7.—HAPLONISCUS RETROSPINIS. ABDOMEN OF MALE. (VENTRAL VIEW.)

is an acute triangular process. The uropoda consist of a single small article, not extending beyond the post-lateral tooth, and placed between that and the median lobe.

All the legs are ambulatory in character, similar and with dactylus uni-ungiculate. They are alike in both sexes.

Three specimens, two males and one female, come from Station 2572, U. S. Bureau of Fisheries' steamer *Albatross*, south-east of Georges Bank, taken at a depth of 1,769 fathoms.

The type is in the U. S. National Museum, Cat. No. 38965.

<sup>a</sup> Norwegian North-Atlantic Expedition, XIV, Zoology, Crustacea, I, 1885, pp. 122-125.



This species differs from the species described by Sars,<sup>a</sup> *Haploniscus bicuspis*, in having the front of the head excavate, in having the flagellum of the second antennæ composed of eight articles instead of thirteen, and in the broader abdomen in proportion to its length with the larger and differently shaped median lobe.

HAPLONISCUS RETROSPINIS, new species.

This species is more similar to *Haploniscus bicuspis* (Sars) in the shape of the head, which does not have the front excavated as in the preceding species. It differs, however, from Sars's species in having the flagellum of the antennæ composed of ten articles instead of thirteen and in having the post-lateral teeth of the abdomen longer; the teeth are twice as long as the uropoda in the female and about four times as long in the male, while in Sars's species they do not exceed the length of the uropoda.

About seventeen specimens, two males and fifteen females, were collected at Station 2547, south of Marthas Vineyard; they were taken at a depth of 390 fathoms.

The type is in the U. S. National Museum, Cat. No. 38966.

Genus JANIRELLA Bonnier, 1896.

Head with a prominent rostrum; lateral margins of head and of all the segments of the body produced in prominent processes. Eyes absent. First pair of antennæ with the peduncle composed of three articles; flagellum composed of several articles. Second pair of antennæ with the third article of the peduncle furnished with an antennal scale.

Terminal segment of body triangularly produced at the apex; uropoda biarticulate, consisting of two small articles.

Legs all ambulatory.

The second antennæ of this and the preceding genus, as in the genus *Nannoniscus* Sars, resemble the *Janiridæ* in having the peduncle composed of six articles, the third furnished with an antennal scale; they also with *Nannoniscus*, in the total absence of eyes, and in the character of the uropods (which are biarticulate and composed of two subequal articles in the present genus, but unarticulate in the preceding genus) resemble the *Desmosomidæ*; but, as Sars says of *Nannoniscus*, in the general form of the body, in the structure of the legs and antennæ they resemble the *Janiridæ*.

This genus differs from *Nannoniscus* in lacking the olfactory papilla to the first antenna, in having the peduncle of the first antenna composed of three articles, in having all the lateral margins of the body produced in processes, in the shape of the terminal segment of the body, and in having the uropoda composed of two articles, biarticulate and not double-branched as in that genus.

The type of the genus is *Janirella nansenii* Bonnier.<sup>a</sup>

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<sup>a</sup> Ann. Univ. Lyon, 1896, pp. 587-593.

*JANIRELLA LOBATA*, new species.

Body oblong-ovate, about twice as long as wide. Color, in alcohol, whitish.

Head wider than long, with the front produced in a long, prominent rostrum, which is bifid at the extremity and has a rounded tooth or lobe on either side of the bifid extremity a little posterior to it; the lateral margins of the head, just back of the antero-lateral angles, are also produced in large lobes, one on either side, directed anteriorly and having broad extremities; on the dorsal surface of the head, on either side of the median line, is a small tubercle near the posterior margin.

The eyes are entirely absent. The first pair of antennæ have the first article of the peduncle large; the two following articles are subequal in length and are each about half as long and half as wide as the basal article; the flagellum is composed of six articles. The second pair of antennæ have the first four articles of the peduncle short, the third furnished with an antennal scale. In all the specimens (ten in number) the antennæ are broken at the fourth article.

The first segment of the thorax has the lateral margins produced on either side in a large lobe, broad at the extremity, similar in shape to the lateral lobes of the head, and also directed anteriorly; the second, third, and fourth segments have the lateral margins produced on either side in three lobes, the posterior lobe being the largest and very broad at the extremity, the median lobe the smallest, and the anterior lobe rounded; in the third and fourth segments the middle lobe is inclined to be double; the fifth and sixth segments have the lateral margins produced in a large rounded anterior lobe and a smaller posterior lobe, the posterior lobe in the fifth segment being subdivided into three small lobes; the seventh segment has the lateral margins produced in one large broad lobe on either side; the segments are about equal in length, and each is furnished with two tubercles, one on either side of the median line.

In the four anterior segments the tubercles are placed on the anterior margin; in the three posterior segments they are placed in the middle transverse line of the segment.

The abdomen is composed of a single segment, which is broad at the base and converges to a narrow extremity. The lateral margins are

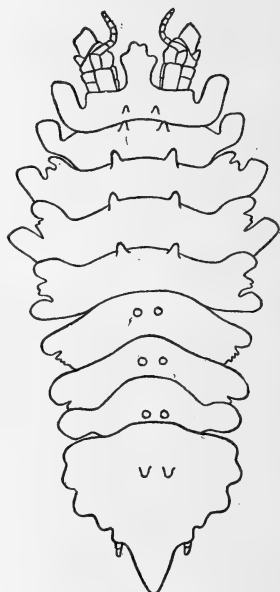


FIG. 8.—*JANIRELLA LOBATA*.



FIG. 9.—*JANIRELLA LOBATA*. FIRST LEG OF FEMALE.

produced in five rounded lobes, which occupy the anterior two-thirds of the length of the segment; below the last lobe the lateral margins are straight and converge to an acute triangular extremity, the apex of which is rounded; this triangular extremity occupies one-third of the length of the segment; on the dorsal surface of the abdomen, about one-third the distance from the anterior margin are two prominent tubercles, one on either side of the median longitudinal line. The uropoda are placed below the last lateral lobe, and are bi-articulate, consisting of two small subequal articles. The legs are alike in both sexes. The first pair are stouter than the following which are all ambulatory and furnished with uni-unguiculate dactyli.

Ten specimens of this species, three males and seven females, are from southeast of Georges Bank.

Three specimens come from Station 2571, steamer *Albatross*, taken at a depth of 1,356 fathoms, one from Station 2572, taken at a depth of 1,769 fathoms, and six from Station 2573, taken at a depth of 1,742 fathoms.

The type, from Station 2571, is in the U. S. National Museum, Cat. No. 38967.

In some of the smaller and younger specimens the smaller lobes are not distinct, and seem to be fused, but in general character they resemble the type as described.

This species differs from *Janirella nanseni* Bonnier in having the lateral processes wider and more rounded like lobes than spine-like as in that species, in having the base of the rostrum not dilated as in that species, in having two spines on all the thoracic segments and not one on the first and three on the second, third, and fourth as in that species.

### Family MUNNIDÆ.

Genus MUNNA Krøyer, 1839.

MUNNA TRUNCATA, new species.<sup>a</sup>

Body oblong-ovate, about twice as long as wide. Surface smooth. Color, in alcohol, whitish.

<sup>a</sup> I have placed this species with *Munna*, although I am inclined to think that it should be made the type of a new genus. If there is a consensus of opinion in favor of this, I would suggest the name *Cacimunna* for this form, and for the species described from the Pacific coast of North America, which I called *Munna cæca*, I would suggest the name *Haplomunna*. (See Bull. U. S. Nat. Mus., No. 54, 1905, pp. 483-485.)



FIG. 10.—JANIRELLA LOBATA. SEVENTH LEG OF FEMALE.

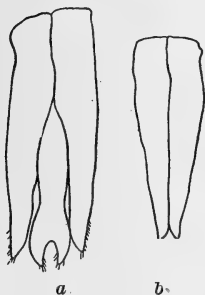


FIG. 11.—JANIRELLA LOBATA. FIRST PLEPOD OF MALE. a. AS FOUND IN ONE SPECIMEN. b. AS FOUND IN TWO SPECIMENS.

Head large, with the front produced in the middle in a large, broad median lobe, truncate at the extremity; on either side of the median lobe is a prominent triangular process; on either side of the triangular process the lateral margin is produced in a long acute spine-like

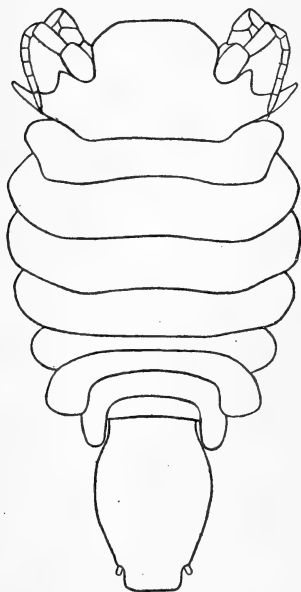


FIG. 12.—MUNNA TRUNCATA.

process, which is about twice as long as the triangular process; these projections probably represent the ocular processes, but the eyes are entirely absent. The first pair of antennæ are short; the two peduncular articles are subequal in length, but the second is more slender than the first; the flagellum is composed of six articles. The second pair of antennæ are broken in all the specimens.

The first four segments of the thorax are the largest, the first being somewhat shorter than the three following; the fifth is the shortest, being less than one-third as long as the preceding segment; the sixth and seventh segments are subequal in length and are also short, but are about one and a half times as long as the fifth; the lateral margins of all the segments are rounded.

The first segment of the abdomen is short, not quite as long as the last thoracic segment; the terminal segment is large, with the lateral margins somewhat rounded, and the extremity truncate. On the ventral side of this segment at the extremity between the median line and the uropod are five sharp teeth as in *Munna fabricii* Krøyer. The uropoda are minute, simple, consisting of a single article, and are situated on either side of the truncate extremity. The first pair of pleopoda in the male are narrow, elongate, with lateral margins straight and not expanded; the extremity is truncate.

The first pair of legs are shorter than those following and are prehensile. The others are long and ambulatory.

About eight specimens of this species come from Station 2547, steamer *Albatross*, south of Marthas Vineyard, and were taken at a depth of 390 fathoms. Three other specimens were found at Station 2507, between Middle Ground and Halifax from a depth of 80 fathoms.

The type from Marthas Vineyard is in the U. S. National Museum, Cat. No. 38968.



FIG. 13.—MUNNA TRUNCATA. FIRST PLEOPODA OF MALE.

This species differs from the other species of the genus, found on the Atlantic coast, *M. fabricii* Krøyer and *Munna krøyeri* Goodsir, in the absence of eyes, in having, instead of peduncle-like projections of the head, spine-like processes, and in the truncate character of the terminal segment of the body.

### Family DESMOSOMIDÆ.

#### ISCHNOMESUS, new name.

The above name is suggested for the genus *Ischnosoma* Sars, which is preoccupied, having been used for a genus of fishes in 1829, and also in 1832 for Coleoptera. Sars used the name for Crustacea in 1866, the type of the genus being *Ischnosoma bispinosum*. In the typical form the uropoda consist of two articles, and are bi-articulate. Later Sars describes another species which he also refers to the genus *Ischnosoma*, *I. quadrispinosum*. In this form the uropoda consist of a single article. I would suggest for this form the generic name *Haplomesus*. The two forms described by Beddard as *Ischnosoma bacillus* and *Ischnosoma bacilloides* have the uropoda bi-articulate as in the type-species, but the abdomen is composed of two segments instead of one as in that species. For these two forms I would suggest the generic name *Rhabdomesus*. For the forms described by Beddard as *Ischnosoma thomsoni* and *Ischnosoma spinosum* and the form described by Tattersall as *Ischnosoma greeni*, all of which agree in having the uropoda formed of a single article and the abdomen composed of two segments, I would suggest the generic name *Heteromesus*. The following key gives the generic characters in a concise form:<sup>a</sup>

*a.* Uropoda consisting of two articles; third article of peduncle of second antennæ not elongate.

*b.* Abdomen consisting of a single segment; fourth and fifth segments of thorax elongate, not produced in spines—*Ischnomesus*, *I. bispinosus* (Sars).

*b'.* Abdomen consisting of two segments; fourth and fifth segments of thorax exceedingly narrow and elongate, and produced laterally in spines,

*Rhabdomesus* <sup>*b*</sup> { *R. bacillus* (Beddard).  
*R. bacilloides* (Beddard).

*a'.* Uropoda consisting of a single article; third article of peduncle of second antennæ elongate.

*b.* Abdomen composed of a single segment; peduncle of first antennæ composed of three articles—*Haplomesus*, *H. quadrispinosus* (Sars).

*b'.* Abdomen consisting of two segments; peduncle of first antennæ composed of two articles,

*Heteromesus* { *H. thomsoni* (Beddard).  
*H. spinosus* (Beddard).  
*H. greeni* (Tattersall).  
*H. spinescens*, new species.  
*H. granulatus*, new species.

<sup>a</sup> A similar arrangement has been suggested by Tattersall, Fisheries, Ireland, Sci. Invest., 1904, II [1905], p. 22.

<sup>b</sup> The antennæ in these two species were lost, but I have placed them in this section because of the character of the uropoda.

## HETEROMESUS GRANULATUS, new species.

Body of female about three and a half times longer than wide; surface closely covered with low granules. The head and all the segments of the thorax, with the exception of the anterior and middle portion of the fifth segment, closely covered with irregular wavy markings or impressions. The first segment of the abdomen is also similarly marked; the first three articles of the peduncle of the second antennæ are spinulose.

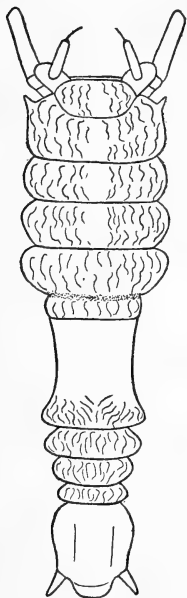


FIG. 14.—HETEROMESUS GRANULATUS. FEMALE.

The frontal margin of the head is straight. The eyes are absent. The first pair of antennæ are composed of two articles, the basal article large and inflated, the second narrow and elongate; there is a rudimentary flagellum consisting of a single article, minute and almost imperceptible. The second pair of antennæ have the first two articles of the peduncle short; the third article is narrow and elongate; the fourth is short; the fifth and sixth are narrow and elongate, the sixth being about one and a half times



FIG. 15.—HETEROMESUS GRANULATUS. SECOND ANTENNA OF FEMALE.

longer than the fifth, and the fifth about twice as long as the fourth, the sixth<sup>a</sup> article is about equal in length to the third, but is about half as wide; the flagellum is composed of fourteen articles, the first three being elongate. In the male the flagellum is composed of sixteen articles, and only the first article is elongate.

The head is immersed in the first thoracic segment, which surrounds the posterior half; the lateral margins of the first seg-

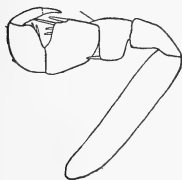


FIG. 16.—HETEROMESUS GRANULATUS. FIRST LEG OF FEMALE.

ment are drawn out on either side in one prominent spine. The first three segments are about equal in width and length; the fourth segment is longer, becoming narrower toward the posterior extremity and constricted; the fifth segment is narrow, elongate, about three times the length of the preceding segment. In the male this segment is narrower than in the female. The sixth and seventh segments are short and subequal in length. The seventh is a little narrower than the sixth.

<sup>a</sup> The peduncle of the second antennæ is six-jointed and not five-jointed as other authors have described it for other species.

The first segment of the abdomen is short; the terminal segment is longer than wide and has the posterior margin produced in a prominent rounded lobe. In the female the uropoda are shorter than in the male, and scarcely extend much beyond the median lobe of the abdomen. In the male they are a little more than twice the length of the median lobe of the abdomen. They consist in both sexes of one long, pointed, spine-like article.

About fifty-seven specimens were collected by the steamer *Albatross* in the following localities: Forty-one females and four males at Station 2547, south of Marthas Vineyard, taken at a depth of 390 fathoms; two males and one female at Station 2572, southeast of Georges Bank, taken at a depth of 1,769 fathoms; one male at Station 2571, southeast of Georges Bank, taken at a depth of 1,356 fathoms; one male and six females at Station 2208, south of Block Island, taken at a depth of 1,178 fathoms, and one female at Station 2078, off Georges Bank, taken at a depth of 499 fathoms.



FIG. 18.—*HETEROMESUS GRANULATUS*. ABDOMEN OF MALE.

The type from Marthas Vineyard is in the U. S. National Museum, Cat. No. 38969.

This species is perhaps closer to *Heteromesus greeni* (Tattersall)<sup>a</sup> than to any others of the genus; it differs, however, from that species in the character of the surface of the body which is covered with low granulations, and not with "spine-like tubercles;" in having a rudimentary flagellum to the first antennæ;<sup>b</sup> in the shorter uropoda of the female (Tattersall figures only the female); in the fewer articles in the flagellum of the second antennæ which also has the three elongate first articles; and in the peculiar markings on the body.

#### *HETEROMESUS SPINESCENS*, new species.

This species is very close to the preceding, but differs in having a two-jointed flagellum to the first antennæ; in the



FIG. 17.—*HETEROMESUS GRANULATUS*. MIDDLE PART OF BODY OF MALE.

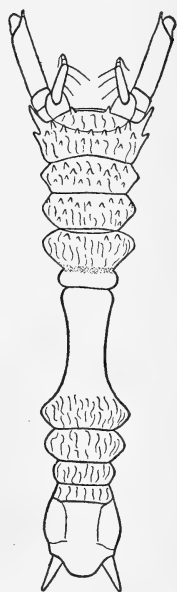


FIG. 19.—*HETEROMESUS SPINESCENS*. MALE.

<sup>a</sup> Fisheries, Ireland, Sci. Invest., 1904, II [1905], pp. 20-22, pl. iv, figs. 1-6.

<sup>b</sup> In all fifty-seven specimens the flagellum is rudimentary. I examined each one carefully, because at first I supposed the flagellum was broken, but a minute article was finally discovered, which is almost imperceptible.

more elongate second article of the first antennæ; in having a prominent spine at the distal extremity on the inner side of the third article of the peduncle of the second antennæ; in having the lateral margin of the first thoracic segment provided with two spines on either side, the anterior one long and prominent; in having the first four segments of the body furnished on the dorsal surface with spine-like tubercles definitely arranged, and the head furnished with two tubercles.

This species differs from *Heteromesus greeni* (Tattersall) in the definite arrangement of the spine-like tubercles on the head and first four segments of the body, which are lacking elsewhere; in the prominent spine at the distal extremity of the inner side of the third article of the peduncle of the second antennæ, and in lacking the "two-jointed" spine at the proximal end of this same article; in having a two-jointed flagellum to the first antennæ instead of a three-jointed one; and in the fewer number of articles to the flagellum of the second antennæ, there being fourteen, instead of eighteen or twenty.

About ten specimens were collected at the following localities by the steamer *Albatross*: One male at Station 2105, off Virginia, taken at a depth of 1,395 fathoms; two females at Station 2714, south of Marthas Vineyard, taken at a depth of 1,825 fathoms; one male at Station 2208, south of Block Island, taken at a depth of 1,178 fathoms; one female at Station 2084, off Georges Bank, taken at a depth of 1,290 fathoms; and five females from Station 2571, southeast of Georges Bank, taken at a depth of 1,356 fathoms.

The type from off Virginia is in the U. S. National Museum, Cat. No. 38970.

### Family MUNNOPSIDÆ.

Genus EURYCOPE Sars, 1863.

EURYCOPE TRUNCATA Richardson.

*Eurycope truncata* RICHARDSON, Proc. U. S. Nat. Mus., XXXIV, 1908, pp. 67-69.

*Localities*.—Marthas Vineyard; southeast of Georges Bank.

Since the description of the above species has been published two more specimens have been found in the material from New Haven. These specimens, a male and a female, are from Station 2572, southeast of Georges Bank, and are from a depth of 1,769 fathoms. This is the first male found, all the other specimens being females. It agrees in every respect with the type.

EURYCOPE MAGNISPINIS, new species.

Body oblong-ovate, about twice as long as wide.

Head with the front produced in the middle in a rostrum with the extremity truncate and the sides incurved; on either side of the



rostrum the frontal margin has a double excavation; the antero-lateral angles are acute. The eyes are absent. The first pair of antennæ have the basal article large and armed with one long spine; the two following articles are subequal in length and are small; the flagellum is lost in the only specimen. The first article of the peduncle of the second antennæ is short, and is furnished on the outer margin with a single spine; the second article is a little longer than the first and is unarmed; the third article is a little longer than the second and is armed with two spines, one on the outer and one on the inner margin; the antennæ are broken at the end of the fourth article.

The first segment of the thorax has the antero-lateral angles produced in one long spine on either side, directed anteriorly; the second segment has the lateral margin produced in one long anterior spine directed anteriorly and one small posterior one on either side; the third and fourth segments have the lateral margin produced on either side in three spines, two small ones

on either side of one long one directed anteriorly; the last three segments have the lateral margins produced on either side in a single long spine, directed anteriorly in the fifth and sixth segments and a little posteriorly in the seventh segment.

The abdomen has the lateral margin produced on either side at the base in one long spine directed a little posteriorly; below these spines, the lateral margins are nearly parallel to about the middle of the segment, where there is an abrupt incision; below this incision is a single long spine, directed posteriorly; below these spines the lateral margins of the segment converge slightly to a truncate extremity. The uropoda have the basal article short; the inner branch is about twice as long as the basal article; the outer branch is a little more than half the length of the inner branch.

The first four segments of the thorax are each armed on the dorsal surface in the median longitudinal line with a single spine on the anterior margin, the spine on the fourth segment being the longest and very prominent; on the three following segments there are two

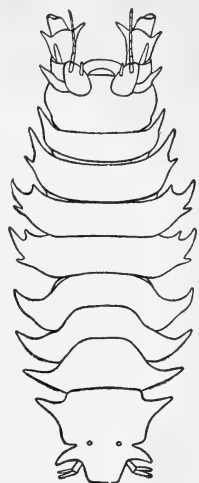


FIG. 20.—EURYCOPE TRUNCATA  
×14½.

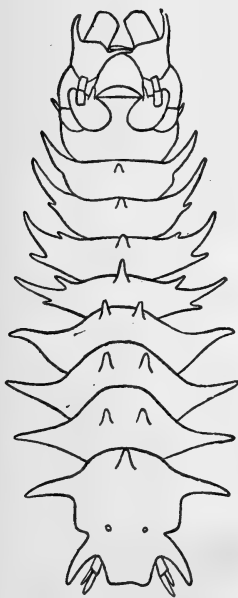


FIG. 21.—EURYCOPE MAGNISPINIS.

long spines, one on each side of the median longitudinal line on each segment, those on the sixth and seventh segments being nearer the middle transverse line of the segment. The abdomen has one long median spine near the base, and two rudimentary spines or tubercles on the dorsal surface, just opposite the incisions in the lateral margins.

Only one specimen, a male, from Station 2043, steamer *Albatross*, off Nantucket Shoals. It was taken at a depth of 1,467 fathoms.

The type is in the U. S. National Museum, Cat. No. 38971.

This species differs chiefly from *Eurycope truncata*, to which it is closely related, in the presence of spines on the dorsal surface of the body.





7

SOME NEW ISOPODS OF THE FAMILY GNA-  
THIIDÆ FROM THE ATLANTIC COAST  
OF NORTH AMERICA

BY

HARRIET RICHARDSON

Collaborator, Department of Marine Invertebrates, U. S. National Museum

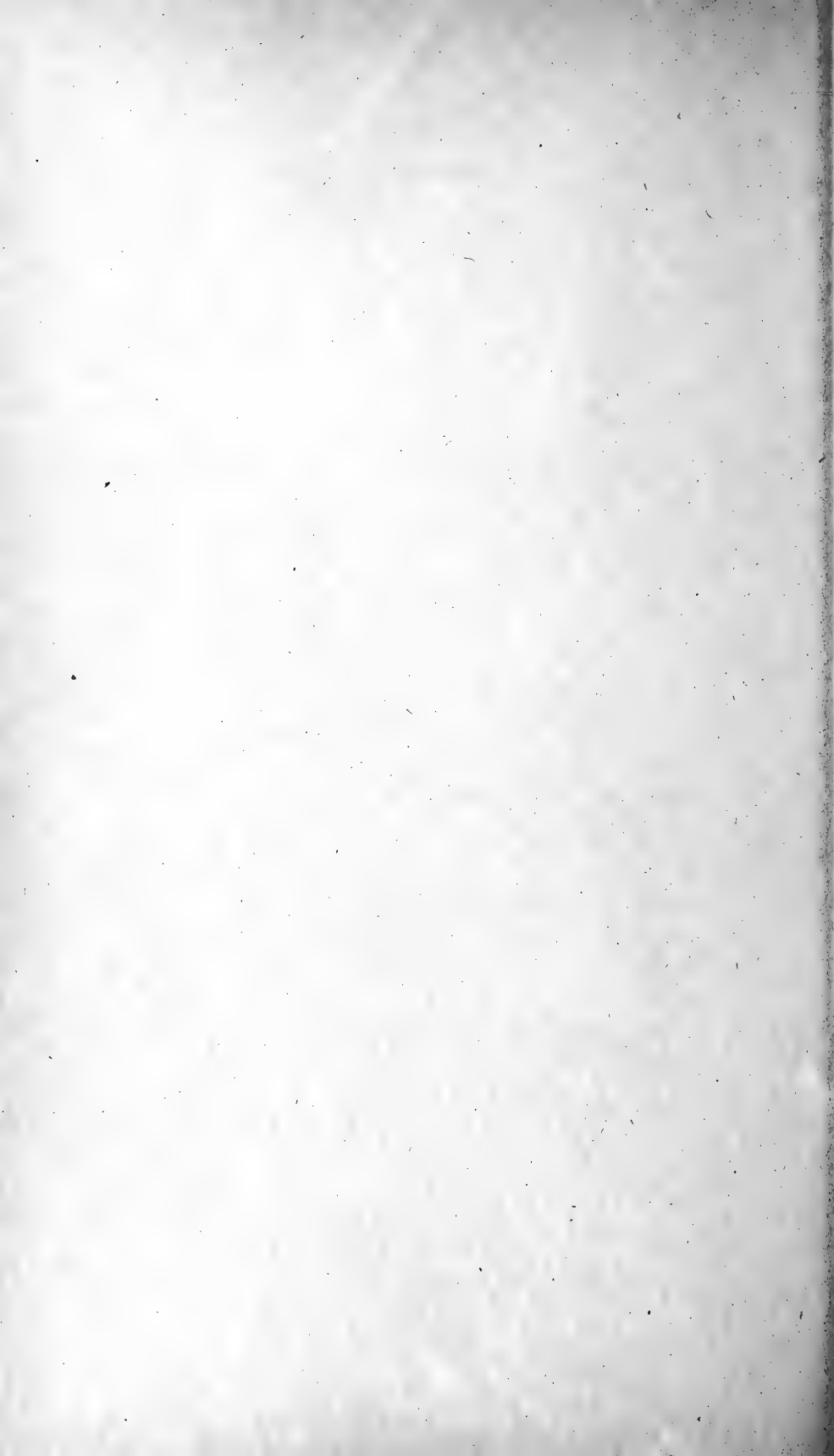
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# SOME NEW ISOPODS OF THE FAMILY GNA- THIIDÆ FROM THE ATLANTIC COAST OF NORTH AMERICA

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# SOME NEW ISOPODS OF THE FAMILY GNATHIIDÆ FROM THE ATLANTIC COAST OF NORTH AMERICA.

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By HARRIET RICHARDSON,

Collaborator, Department of Marine Invertebrates, U. S. National Museum.

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In the present paper three new species are described. One is especially interesting, as it is only the second species known of the genus *Bathygnathia*, the original species having been described from a fragment and referred to the genus *Anceus*. The other two species belong to the genus *Gnathia*. The specimens described have recently been returned by Prof. A. E. Verrill to the U. S. National Museum.

## Family GNATHIIDÆ.

### Genus BATHYGNATHIA Dollfus, 1901.

All seven segments of thorax free; eyes absent; head with a long, prominent rostrum; first gnathopods of male consisting of five articles; other characters as in the genus *Gnathia*.

The type of the genus is *Anceus bathybius* Beddard.<sup>a</sup>

In 1893 Stebbing<sup>b</sup> suggested that the form described by Beddard would no doubt require to be transferred to a new genus, but that inasmuch as the species was described from a fragment it would be better to wait until more material was obtained.

In 1901 Dollfus, without additional material, erected for Beddard's species the new genus *Bathygnathia*.

#### BATHYGNATHIA CURVIROSTRIS, new species.

Body elongate, about four times longer than wide; surface smooth.

Head squarish, with the front produced in a long, prominent rostrum, equal in width to one-third the width of the head, and about two-thirds as long as the head; lateral margins even and rounded and

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<sup>a</sup> Challenger Report, Zool., XVII, Pt. 48, Report on the Isopoda (Pt. 2), 1886, pp. 135-137, pl. xviii, figs. 1-7.

<sup>b</sup> Hist. of Crustacea, 1893, p. 338.

converging to a pointed extremity; eyes entirely absent. First pair of antennæ with the first two articles of the peduncle subequal; third article about one and a half times longer than either of the two preceding. Flagellum composed of four articles on one side and five on the other; first article minute; second and third elongate, the third being longer than the second; fourth half as long as third; fifth half as long as fourth. First antennæ extend to end of peduncle of second pair. Second pair of antennæ with first article of peduncle long; second article half as long as first; third article almost as long as first; fourth about one and a half times longer than third; flagellum, composed of seven articles, extends to tip of mandibles. Mandibles narrow and elongate, extend one-third of their entire length beyond extremity of rostrum.



FIG. 1.—BATHYGNATHIA CURVIROSTRIS.

About one-third the distance from the base, on the outer margin, is a prominent, acute tooth. Tip of mandible bent and directed inward; mandibles narrower from a point beginning about opposite tip of rostrum and converging from that point to the acute extremity.

All seven segments of the thorax free; first short, about half as long as the two following which are subequal, and equal in width to those succeeding; fourth segment equal in length to second and third together; fifth longest, about one and a fourth times longer than the fourth; sixth about equal in length to the fourth; seventh extremely short, not longer than the segments of



FIG. 2.—BATHYGNATHIA CURVIROSTRIS. MANDIBLE.

the abdomen and not as wide. The second and fourth segments have the lateral margins produced at the anterior portion in small angular processes.



FIG. 3.—BATHYGNATHIA CURVIROSTRIS. FIRST LEG OF MALE.

First four segments of abdomen equal in length, with their lateral margins produced in triangular processes directed posteriorly; fifth segment about one and a half times longer than the preceding; terminal segment triangular, the sides converging to a long, narrow, pointed extremity. Branches of uropoda similar in shape, with the sides converging to a rounded extremity; outer branch shorter than the inner, which extends beyond the tip of the terminal abdominal segment. The outer branch does not extend beyond the extremity of the last abdominal segment.

outer branch shorter than the inner, which extends beyond the tip of the terminal abdominal segment. The outer branch does not extend beyond the extremity of the last abdominal segment.

First pair of legs in male transformed into a sort of operculum, arching over the ventral side of the head and concealing the mouth parts; they are composed of five articles, the third being the largest. The terminal or fifth article is nearly twice as long as the fourth. The other five pairs of legs are ambulatory. There are no appendages to the seventh thoracic segment.

This species is very similar to the type species described by Beddard, but differs in the structure of the mandibles, in the additional article to the flagellum of the second antennæ, in the longer terminal joint of the first gnathopods, in the differently shaped rostrum, in the absence of the bunch of hairs at the tip of the rostrum, and in having the mandibles fitting closely around the rostrum, not projecting straight forward at a distance from the rostrum.

Two fine specimens, both males, are from the following localities: One (type) from *Albatross* Station 2547, south of Marthas Vineyard, was taken at a depth of 390 fathoms; another from *Albatross* Station 2528, east of George's Bank, was taken at a depth of 677 fathoms.

*Type*.—Cat. No. 38972, U.S.N.M.

Beddard's species was taken at a depth of 900 fathoms. The division proposed by Dollfus,<sup>a</sup> in which genera provided with eyes are littoral or do not extend below a depth of 500 fathoms and those deprived of eyes live at a depth of 1,000 fathoms can not be maintained, for we have now a species belonging to a genus without eyes found at a depth of only 390 fathoms.

#### Genus GNATHIA Leach, 1814.

##### GNATHIA MULTISPINIS, new species.

Body ovate; lateral margins drawn out in small spines; dorsal surface covered with small spines and tubercles. Legs also covered with small spines.

Head broader than long, about twice as wide as long; frontal margin not produced in a rostrum, but in a small median point; antero-lateral angles produced in a bifurcated spine; lateral margins drawn out on either side in spines; dorsal surface covered with small spines and tubercles. Eyes moderately large, composite, and placed on the lateral margins. First pair of antennæ with the first two articles of the peduncle short and subequal; third as long as first two taken together; flagellum composed of four articles, the first very short. Second antennæ with the first two articles of the peduncle short; last two elongated and subequal; flagellum broken at the fourth article. Mandibles projecting a considerable distance in front of the head; broad at base and produced to narrow, acute extremities; on the outer margin, on the posterior half furnished

<sup>a</sup> Bull. Soc. Zool. France, XXVI, 1901, pp. 239-240.

with a row of three spines, two tubercles, and a bifurcated spine, the latter being the most anterior.

First segment of thorax partly coalesced with head and not free, narrower and also much shorter than the following segment; second

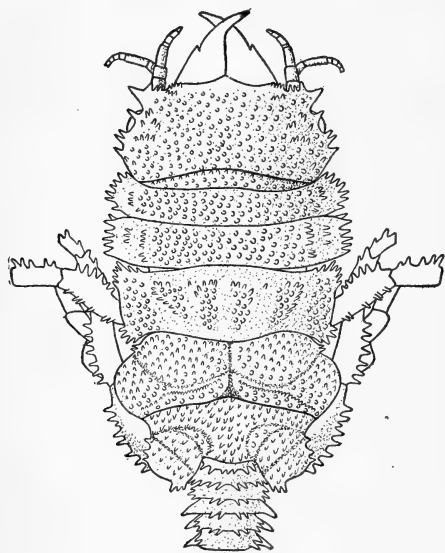


FIG. 4.—GNATHIA MULTISPINIS.

and third segments (the first and second free segments) about equal in length and width, with the lateral margins produced in spines and the dorsal surface covered with small spines and tubercles; fourth segment (third free segment) longest, with the lateral margins drawn out anteriorly and posteriorly in spines and the dorsal surface covered with small spines and tubercles; fifth segment (fourth free segment)

not quite as long as the preceding, with the dorsal surface divided up into areas, these areas being covered with small spines and tubercles; sixth segment (fifth free segment) almost as long as the fourth (third free segment), with the dorsal surface also divided up into areas, which are beset with small spines and tubercles; seventh segment (sixth free segment) exceedingly short, only about half as long as the abdominal segments and not quite as wide, produced on its posterior margin in spines.

First five abdominal segments about equal in length and width, produced laterally in triangular processes and spines, with the posterior margins also produced in spines. The last segment with the uropoda is lost in the only specimen.

All five ambulatory legs are beset with spines in rows. First pair of legs, or gnathopods, composed of three articles, a large basal article, a small middle article, and a minute terminal joint.

Only one specimen, a male, was collected at *Albatross* Station 2231, off Delaware, taken at a depth of 965 fathoms.

*Type*.—Cat. No. 38973, U.S.N.M.

This species is very similar to *Gnathia cristata* (Hansen)<sup>a</sup> but differs from that form in not having the front of the head produced



FIG. 5.—GNATHIA MULTISPINIS. MANDIBLE.

<sup>a</sup> Vidensk. Meddel. Naturh. Foren i. Kjøbenhavn., 1887-88, p. 182, pl. VII, figs. 2-2a. See also Richardson, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 56-57.

in a rostrum (no mention is made of the rostrum in the description, but the figure shows this point), in the bifurcate antero-lateral angles of the head (this character is also taken from the figure), in all the segments of the thorax with the dorsal surfaces covered with small spines and tubercles, while in Hansen's species the sixth segment (fifth free segment) is described as smooth, the fifth segment (fourth free segment) as ornamented with a few tubercles, the median part being smooth, and the fourth segment (third free segment) as smooth posteriorly. The present species also has more spines on the legs and abdomen, and the arrangement of the spines on the lateral margins of the head and of the segments of the thorax differs from the species figured by Hansen.

**GNATHIA SERRATA, new species.**

Body elongate, about three times longer than wide. Head covered with small tubercles, the tubercles being denser on the lateral and posterior portions. First, second, third, and fifth free segments of the thorax also covered with small tubercles; fourth free segment smooth.

Head large, squarish in shape, with the front produced in the middle in a rostrum rounded anteriorly; antero-lateral angles acute. In a dorsal view the eyes are not visible; they are placed at the sides of the head and are moderately large and composite. The mandibles are small, not projecting much beyond the rostrum; curved at base and at the anterior extremity, the inner margins converging abruptly to the narrow, pointed extremity. Just back of the mandibles the anterior margin of the head, seen from the underside, is produced in wheel-like processes, one on either side (not visible from above), edged with six teeth; between these processes the anterior margin is furnished with four teeth on either side, which may be

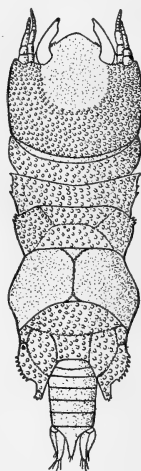


FIG. 6.—*GNATHIA SERRATA*.

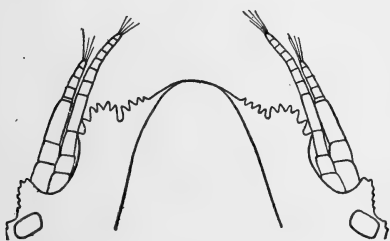


FIG. 7.—*GNATHIA SERRATA*. UNDERSIDE OF ANTERIOR PORTION OF HEAD.

seen in a dorsal view, as they are situated close to the mandibles at the base of the rostrum. First pair of antennæ with a peduncle of three articles, the third the longest, about twice as long as the second, and a flagellum of five articles, the first of which is minute. Second pair of antennæ with a peduncle of four articles, and a flagellum of seven.

First segment of thorax coalesced with the head; second and third (first and second free segments) subequal and furnished dorsally with

small tubercles; lateral margins of second free segment produced in a few small spines; fourth segment (third free segment) about equal in length to first two taken together, also covered dorsally with small tubercles and with the antero-lateral angles produced in a few small spines; fifth segment (fourth free segment) the longest and perfectly smooth; sixth segment (fifth free segment) almost as long as the preceding, covered dorsally with small tubercles and with the post-lateral angles produced backward in a tuberculated process on either side; seventh segment (sixth free segment) not longer than and not quite so wide as the abdominal segments.

First five abdominal segments about equal in length; sixth or terminal segment tapering to a narrow, pointed extremity. Outer branch of uropoda shorter than the inner, which extends a little beyond the extremity of the abdomen; both are furnished with long hairs.

First pair of legs or gnathopods composed of three articles, the first extremely large, the second small, and the third or terminal one minute. The gnathopods form a sort of operculum covering the mouth parts. The following five pairs of legs are ambulatory; the third pair with a crest of four spines on the ischium at the distal end. The fourth and fifth pairs of legs have a prominent process at the distal extremity of the merus, carpus, and propodus on the inferior margin.

Two specimens, both males, were taken at *Albatross* Station 2547, south of Marthas Vineyard, at a depth of 390 fathoms.

*Type*.—Cat. No. 38974, U.S.N.M.

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<sup>a</sup> Bull. U. S. National Museum, No. 54, 1905.







8

8

# THE ISOPOD CRUSTACEAN, ANCINUS DEPRESSUS (SAY)

BY

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No. 1663.—From the Proceedings of the United States National Museum,  
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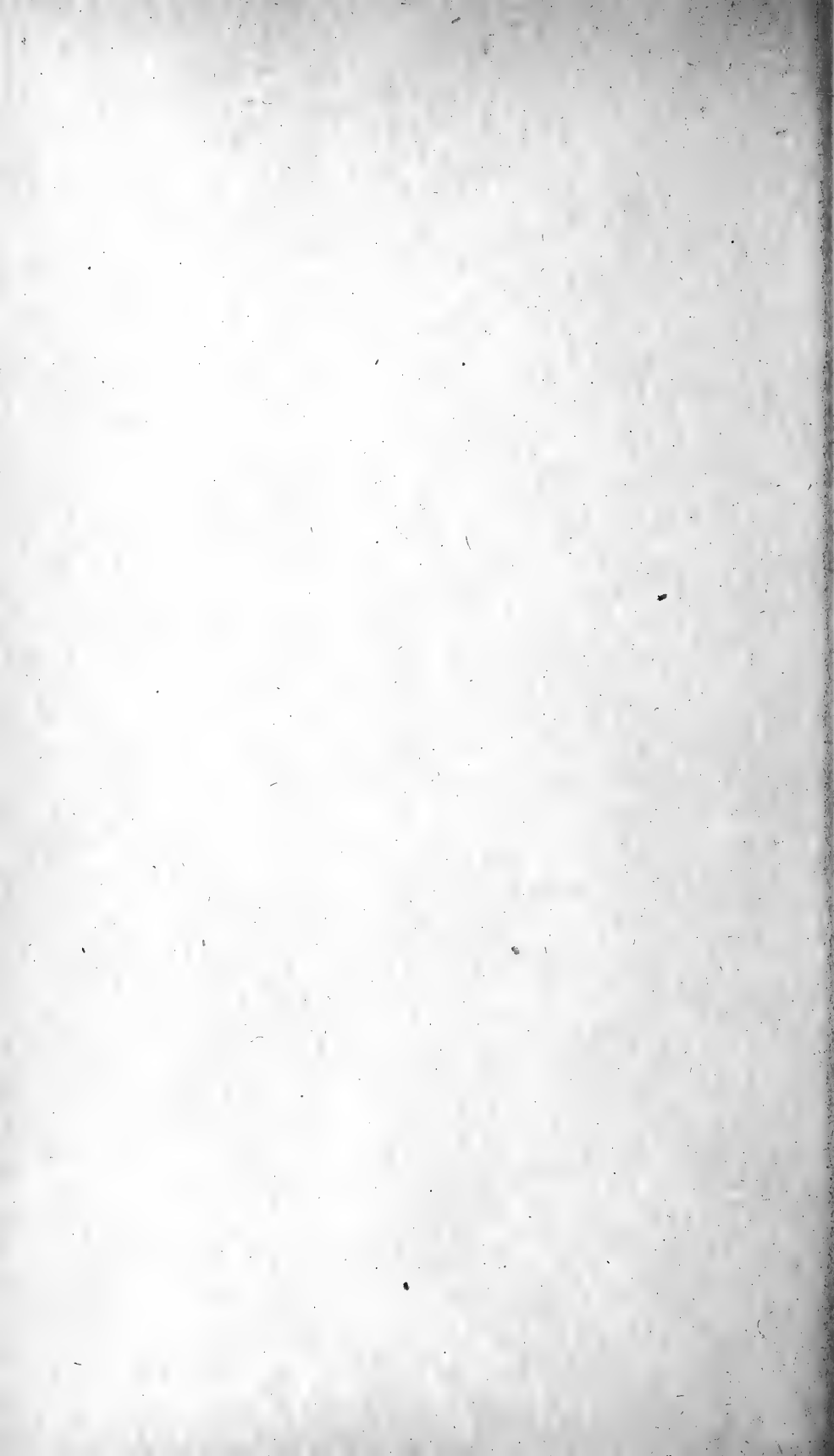
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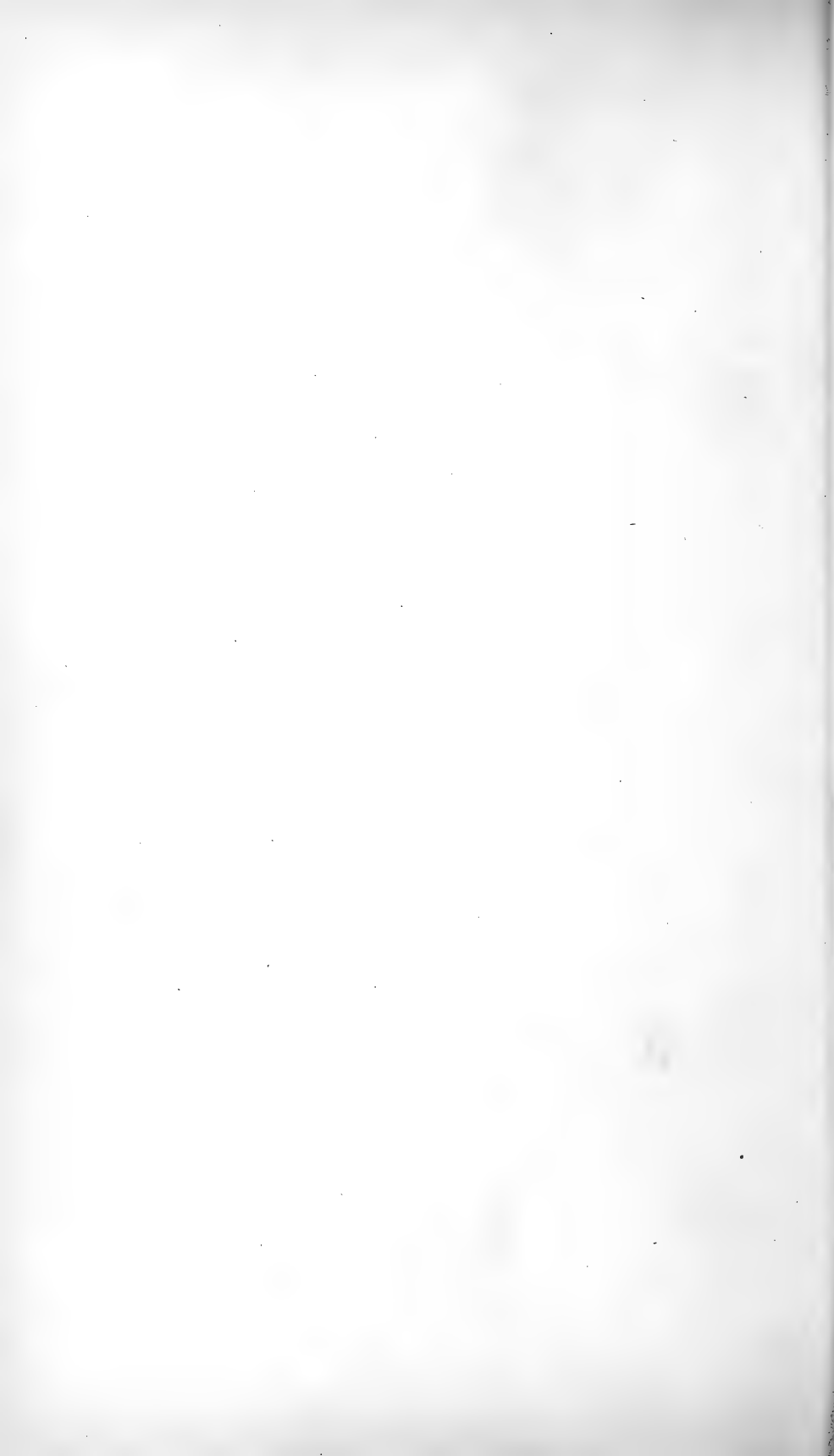
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## THE ISOPOD CRUSTACEAN, ANCINUS DEPRESSUS (SAY).

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In 1818, Thomas Say<sup>a</sup> described the form which he referred to the genus *Næsa*, as *N. depressa*. A single dried specimen of this species is to be found in the Academy of Natural Sciences in Philadelphia which I have had an opportunity to examine, and which I<sup>b</sup> redescribed and figured in 1905. Another dried specimen of this species is to be found in the British Museum, which, according to White<sup>c</sup> and Hansen,<sup>d</sup> was presented to that museum by Thomas Say.<sup>e</sup>

In 1840, Milne Edwards<sup>f</sup> redescribed *N. depressa*, and instituted for it the new genus *Ancinus*. The footnote given by Milne Edwards for *Ancinus depressus* reads as follows:

*Næsa depressa* Leach, Collections du Musée britannique de Londres. Cette espèce nous paraît être la même que celle décrite sous ce nom par Say (Journal of the Academy of Philadelphia, I, p. 483.)

It is probable that Milne Edwards did not know that this specimen had been presented by Say, and therefore referred it to Leach.

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<sup>a</sup> Journ. Acad. Nat. Sci. Phila., I, 1818, pp. 483-484.

<sup>b</sup> Bull. U. S. Nat. Mus., No. 54, 1905, p. 272.

<sup>c</sup> List of the Specimens of Crustacea in the Collection of the British Museum, 1847, p. 105.

<sup>d</sup> Quart. Journ. Micr. Sci., XLIX, 1905-6, new ser., p. 132.

<sup>e</sup> Dr. Hansen says of this specimen: "The specimen named seems to be the only one existing in any zoological museum; at least I have asked for material of this form in Paris and in American museums, but with negative results." When I asked for Say's types at the Academy of Natural Sciences of Philadelphia I was told that they were not there, but on one occasion, when I happened to be at the museum, I accidentally discovered them.

<sup>f</sup> Histoire des Crustacés, III, 1840, pp. 225-226.

In 1905, Tattersall<sup>a</sup> follows Milne Edwards in referring *Næsa depressa* to Leach. Leach, however, never described this form, the earliest description having been given by Say in 1818, and the next to follow being that of Milne Edwards in 1840. Tattersall says of this species (p. 65) in connection with remarks on the distribution of *Bathycopea typhlops*, an allied form:

It is to be regretted that the locality of *Ancinus depressus* Leach is unknown. It would have been interesting to have compared the habitats of the two forms.

Milne Edwards also says of *Ancinus depressus* "Patrie inconnue." Say gives the locality of the specimen of *Ancinus depressus* placed in the Academy of Natural Sciences of Philadelphia as Egg Harbor, New Jersey. White mentions North America as the habitat of the specimen presented by Thomas Say to the British Museum.

In 1905, Tattersall instituted the family *Anciniidae* for the reception of this genus and his new genus *Bathycopea*. In the same year Hansen created the section *Ancinini* of the *Sphærominæ platybranchiatae* to include this genus, as well as his new genus *Ancinella* and *Tecticeps* Richardson. *Ancinus* differs, however, from any of the genera mentioned in the character of the first and second pairs of pleopoda, the first of which are single branched instead of double branched.<sup>b</sup> For this reason it can not be left where it has been placed in the classifications proposed by these authors.<sup>c</sup>

Last spring in the material that came to the U. S. National Museum from Prof. A. E. Verrill was a single specimen of *Ancinus depressus*, collected at Woods Hole, Massachusetts, in 1885, by the U. S. Bureau of Fisheries steamer *Albatross*. It was found at a depth of 2-3 fathoms. The specimen is a female and, although it differs slightly from the figures given by Milne Edwards for this form, I am inclined to think that the differences are perhaps sexual. The uropods are slightly shorter and the first pair of legs have the hand more enlarged. In the shorter uropoda, however, it agrees with the dried specimen in the Academy of Natural Sciences of Philadelphia.<sup>d</sup> As no complete figure has ever been given since that of Milne Edwards, I have thought it would be of interest to figure and redescribe this specimen, which has been preserved in alcohol, and also give some detailed drawings of parts which it has been impossible to study in the dried specimens.

<sup>a</sup> Fisheries Ireland Sci. Invest., 1904, II, 1905, p. 11.

<sup>b</sup> See description and figures which are to follow.

<sup>c</sup> I prefer to retain *Ancinus* as the type and only genus of the family *Anciniidae*, but those who desire to follow the classification of Hansen may accept the name *Sphærominæ colobranchiatae* for a fourth group to include this form.

<sup>d</sup> See figure in Bull. U. S. Nat. Mus., No. 54, 1905, p. 272.

## ANCINUS Milne Edwards, 1840.

## ANCINUS DEPRESSUS (Say).

*Næsa depressa* SAY, Journ. Acad. Nat. Sci. Phila., I, 1818, pp. 483-484.—RICHARDSON, Amer. Nat., XXXIV, 1900, p. 224; Proc. U. S. Nat. Mus., XXIII, 1901, p. 537.

*Ancinus depressus* MILNE EDWARDS, Hist. Nat. Crust., III, 1840, p. 226, pl. XXXII, figs. 17-20.—HANSEN, Quart. Journ. Micr. Sci., 1905-6, p. 132.—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 271-272, fig. 282.—TATTERSALL, Fisheries, Ireland, Sci. Invest., 1904, II [1905], p. 11-18, 65.

Body oblong ovate, twice as long as wide,  $6 \frac{mma}{2}$  by  $12 \frac{1}{2} \frac{mm}{2}$ . Surface smooth, punctate, and with a few markings. Color, in alcohol, whitish.

Head very wide, much wider than long,  $1 \frac{1}{2} \frac{mm}{2}$  by  $5 \frac{mm}{2}$ ; it is wider anteriorly than posteriorly, the antero-lateral angles being produced in a lateral direction and forming acute angles. The post-lateral angles are rounded. The anterior margin is produced in the middle in a broad, quadrangular process between the basal articles of the first pair of antennæ, and extends forward to the outer margin of these articles. It meets the frontal lamina at its anterior extremity. The eyes are round, composite, and situated close to the posterior margin of the head, but at a distance from the post-lateral angle equal to the width of one eye. The head is coalesced with the first thoracic segment about the middle, but the sides are free. The first pair of antennæ have the basal article large, about twice as long as wide; the second article is half as long as the first; the third article is narrower than either of the first two and is one and a half times as long. The flagellum is composed of nine articles and extends to the posterior margin of the second thoracic segment. The second pair of antennæ have the first article of the peduncle extremely short; the two following are subequal and but little longer than the basal article; the fourth and fifth are also short and subequal, being but little longer than the two preceding ones; the flagellum is composed of nine articles and extends to the posterior margin of the first thoracic segment.

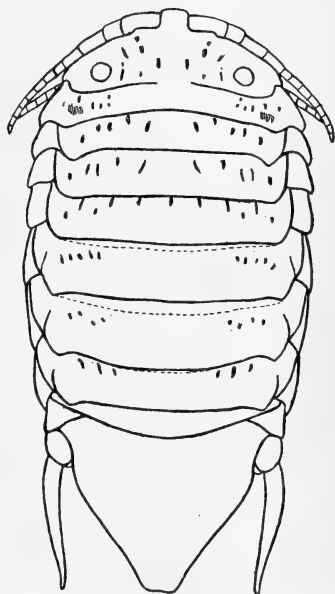


FIG. 1.—*ANCINUS DEPRESSUS*.  
× 14½.

<sup>a</sup> All former measurements were taken from a half-millimeter scale, and should be changed from millimeters to half millimeters.

The maxillipeds have the second, third, and fourth articles of the palp produced into lobes or processes. The mandibles have no masticatory process; the cutting edge is provided with four large blunt

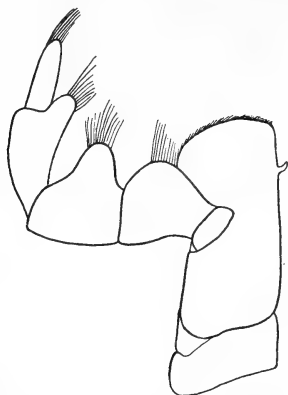


FIG. 2.—*ANCINUS DEPRESSUS*.  
MAXILLIPED.  $\times 77\frac{1}{2}$ .

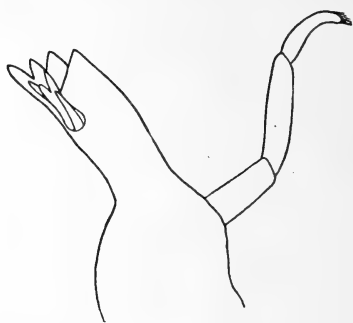


FIG. 3.—*ANCINUS DEPRESSUS*. MAN-  
DIBLE.  $\times 77\frac{1}{2}$ .

teeth; below the cutting edge is a process provided at the tip with three teeth; below this process is a long spine.

The first two segments of the thorax appear to be a little shorter than those following, which are subequal in length. All are of nearly

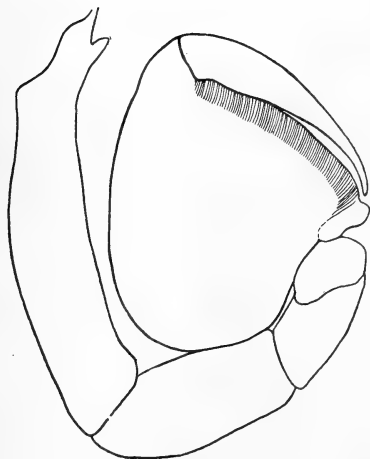


FIG. 4.—*ANCINUS DEPRESSUS*. FIRST  
PAIR OF LEGS OF FEMALE.  $\times 77\frac{1}{2}$ .

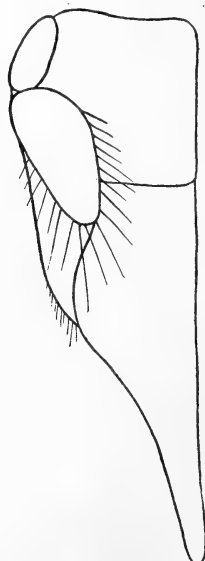


FIG. 5.—*ANCINUS DEPRESSUS*. FIRST  
AND SECOND PLEO-  
POD.  $\times 41$ .

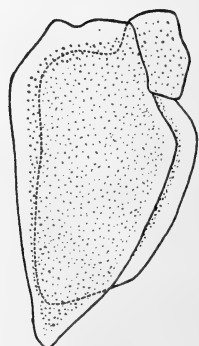


FIG. 6.—*ANCINUS DEPRESSUS*. THIRD  
PLEOPOD.  $\times 41$ .

equal width, the sides of the body being almost parallel. With the exception of the first, the epimera of all the segments are distinctly separated; they are broad, quadrangular plates with the post-lateral



angles more or less produced, and they are all bent downwards about the middle almost at right angles with the segments. On the ventral side they are also produced in the form of a plate, covering the proximal extremity of the legs.

The abdomen is composed of two distinct segments. The first is short, not as long as the last thoracic segment, and has no suture lines indicating other coalesced segments. The terminal segment is triangular in shape with the apex appearing somewhat truncate, owing to the sides of the segment being turned downward and inward, so that on the ventral side a funnel-like opening is formed. The uropoda are composed of a small rounded peduncle and a single slender,

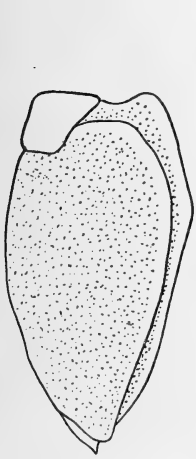


FIG. 7.—*ANCINUS DEPRESSUS*. FOURTH PLEPOD.  $\times 41$ .

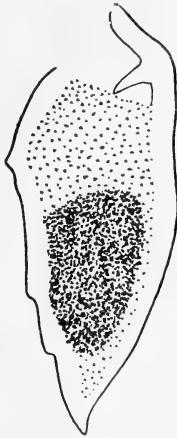


FIG. 8.—*ANCINUS DEPRESSUS*. FIFTH PLEPOD. OUTER BRANCH.  $\times 41$ .

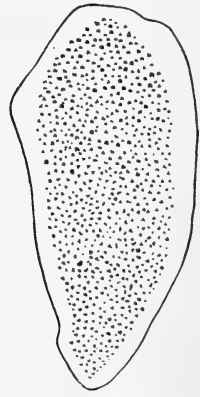


FIG. 9.—*ANCINUS DEPRESSUS*. FIFTH PLEPOD. INNER BRANCH.  $\times 41$ .

movable branch, tapering and acute at the extremity. This branch extends to the extremity of the last abdominal segment.

The first pair of legs are subschelate and have the propodus very much enlarged. All the other legs are ambulatory.

The first pair of pleopoda are small, longer than wide and composed of a single branch furnished with long hairs. This branch is widely separated from the corresponding branch of the opposite side. The second pair of pleopoda are large, double branched, the two branches being placed side by side and attached to the peduncle, so that a sort of operculum is formed, completely covering the following pleopoda. The third pleopoda have the endopod slightly longer than the exopod; both branches without marginal setæ. Fourth pleopoda with endopod and exopod of nearly equal length, and without marginal setæ. Fifth pleopoda with both branches unjointed and without marginal setæ.

Owing to the difference in the structure of the pleopoda, this genus remains alone the type of the family *Anciniidae*. *Bathycopea* Tattersall cannot be retained in the family.







COLLECTIONS RECUEILLIES PAR M. MAURICE DE ROTHSCHILD  
DANS L'AFRIQUE ORIENTALE ANGLAISE.

**Isopodes terrestres nouveaux,**

PAR M<sup>lle</sup> HARRIET RICHARDSON.

Extrait du *Bulletin du Muséum d'histoire naturelle*. — 1909, n° 4, p. 156.

Les matériaux de cette collection, qui est au Muséum d'Histoire naturelle de Paris, m'ont été envoyés pour la détermination par M. le Professeur E.-L. Bouvier; ils comprennent un nouveau genre et cinq nouvelles espèces appartenant à la famille des *Eubelidae*.

TABLEAU ANALYTIQUE DES GENRES D'*EUBELIDAE* DE L'AFRIQUE ORIENTALE.

a. Flagellum des antennes composé de deux articles.

b. Épimères du premier segment thoracique, épais, séparés en dessus de la partie médiane du segment par un sillon longitudinal. Bords latéraux non sillonnés, entiers postérieurement : Genre *Hiallum*.

b'. Épimères du premier segment thoracique non séparés du segment : Genre *Hiallides* nov. gen.

a'. Flagellum des antennes composé de trois articles.

Épimères du premier segment du thorax, épais, séparés en dessus de la partie médiane du segment par un sillon longitudinal. Bords latéraux non sillonnés, incisés postérieurement : Genre *Mesarmadillo*.

GENRE **Hiallum** Budde-Lund.

*HIALLUM* Budde-Lund. A Revision of *Crustacea Isopoda Terrestria*, p. 22-23, 1899.

Flagellum des antennes de la seconde paire composé de deux articles. Épimères ou coxopodites du premier segment thoracique, épais, séparés en dessus de la partie médiane par un sillon longitudinal. Bord latéral non sillonné, entier postérieurement. Segment terminal de l'abdomen triangulaire à la base, avec le sommet allongé en un processus s'étendant entre les articles basilaires des uropodes. Branche externe des uropodes insérée vers le milieu du bord postérieur du grand article basilaire, qui est quadrangulaire.



**Hiallum Rothschildi** nov. sp.

Corps ovale oblong, convexe et contractile en boule. Surface lisse. Couleur d'un brun rougeâtre clair avec une bande longitudinale médiane de taches jaunes, sur chaque côté de laquelle se voient deux bandes longitudinales de lignes jaunes ondulées. Uropodes nettement jaunes.

Tête beaucoup plus large que longue (3 millim.-6 millim.), avec le front droit et non bordé. Yeux petits, composés et situés vers les bords latéraux. Les antennes de la première paire sont petites; celles de la deuxième paire ont le premier article court; deuxième article deux fois aussi long que le premier, troisième légèrement plus court que le deuxième, quatrième deux fois aussi long que le troisième, cinquième une fois et demie plus long que le quatrième. Le flagellum est composé de deux articles, dont le premier est presque deux fois aussi long que le second.

Le premier segment du thorax est à peu près une fois et demie plus long que chacun des segments suivants, qui sont subégaux. Les épimères sont représentés par un bourrelet le long du bord latéral du segment; ce bourrelet est plus large antérieurement que postérieurement et séparé de la partie dorsale par un sillon. Les bords latéraux ne sont pas sillonnés et sont entiers postérieurement. Les épimères ne sont indiqués sur aucun des segments suivants.

Les cinq premiers segments de l'abdomen sont de longueur égale, mais les parties latérales des deux premiers sont couvertes par le septième segment thoracique. Les parties latérales des trois segments suivants sont bien développées et recourbées, avec les angles latéraux postérieurs aigus. La partie basilaire du segment terminal est sub-triangulaire avec le sommet allongé en un long processus assez aigu à l'extrémité. Le pédoncule des uropodes est grand, presque aussi long que large, avec les angles postérieurs allongés de chaque côté d'une excavation médiane. Dans cette excavation est placée la très petite branche externe, qui ne s'étend pas au delà des angles latéraux du pédoncule. Le pédoncule occupe tout l'espace compris entre les parties latérales saillantes du cinquième segment abdominal et le processus apical du segment terminal; il s'étend au delà de ces deux parties. La branche interne des uropodes atteint l'extrémité du processus apical du segment terminal, mais n'est pas visible en dessus; elle n'atteint pas l'angle interne postlatéral du pédoncule.

L'espèce est facilement reconnaissable à ses uropodes jaunes. Elle diffère des espèces précédentes par la petite branche externe des uropodes, par le pédoncule plus grand, par le processus plus aigu du segment terminal de l'abdomen, par les épimères légèrement plus larges et par la différence de couleur.

De nombreux individus du pays Somali, région de Daouenlé, Hieka, rivière Golba, Kounhi et Gadjia (Éthiopie méridionale).

Le type est au Muséum d'Histoire naturelle de Paris.

Le co-type est à l'U. S. National Muséum, cat. n° 38529.

**Hiallum affine** nov. sp.

Corps ovale oblong, très convexe, contractile en boule. Surface lisse.

Couleur d'un brun rougeâtre, avec des lignes ondulées brun clair de chaque côté de la bande longitudinale médiane, qui est de couleur brun rougeâtre. Les parties latérales du corps sont d'un brun clair avec une bande de brun plus sombre en dedans, mais extérieurement par rapport aux bandes ondulées brun clair.

Tête beaucoup plus large que longue (3 millim. — 7 millim.), avec le front droit et non marginé. Yeux petits, composés et situés sur les bords latéraux. Épistome lisse.

Antennes de la première paire presque imperceptibles, composées de deux très petits articles. Antennes de la deuxième paire avec le premier article court, le deuxième article deux fois aussi long que le premier, le troisième un peu plus court que le second et plus étroit, le quatrième environ deux fois aussi long que le troisième, le cinquième environ une fois et demie plus long que le quatrième. Le flagellum se compose de deux articles, dont le premier est plus long que le second.

Le premier segment du thorax est une fois et demie plus long que chacun des segments suivants, qui sont subégaux. Ses angles latéraux postérieurs sont légèrement allongés et arrondis. Épimères représentés par un bourrelet étroit, un peu épaissi, notable sur la moitié intérieure du bord latéral et séparé de la partie dorsale du segment par un sillon longitudinal. Bord latéral non sillonné, entier postérieurement. Les épimères ne sont distincts sur aucun des autres segments.

Les cinq premiers segments de l'abdomen sont presque de longueur égale. Les parties latérales des deux premiers segments sont recouvertes par le dernier segment thoracique. Les parties latérales des trois segments suivants sont bien développées et recourbées, avec les angles latéraux postérieurs aigus; celles du cinquième segment s'étendent presque jusqu'à l'extrémité du segment terminal. Dernier segment avec la partie médiane sub-triangulaire et le sommet très allongé en un étroit processus, arrondi à l'extrémité.

Les uropodes ont le pédoncule grand, presque aussi long que large, remplissant complètement l'espace compris entre les parties latérales du cinquième segment et la partie saillante du segment terminal. Les angles internes et externes du bord postérieur sont allongés de chaque côté d'une excavation profonde, dans laquelle la branche externe est insérée. La branche externe est grêle, conique, et s'étend un peu au delà des angles latéraux du pédoncule et de la partie saillante du segment terminal de l'abdomen. La branche interne est courte, n'atteint pas tout à fait l'extré-

mité de l'angle interne postlatéral du pédoncule ou l'extrémité du segment terminal.

Cette espèce diffère de *Hiallum Hilgendorfi*, dont elle est très voisine, par l'endopodite plus court des uropodes et par les épimères plus étroits du premier segment thoracique.

De nombreux individus venant de Bourka, Ourbon, Karssa, rivière Golba, Éthiopie méridionale, et d'autres individus de Baltchi (Afrique orientale anglaise). Un individu imparfait, appartenant peut-être à cette espèce, vient de Harrar.

Le type est au Muséum d'Histoire naturelle de Paris.

Le co-type est à l'U. S. Nat. Mus., cat. n° 38530.

***Hiallum post-flavum* nov. sp.**

Corps ovale oblong. Surface lisse. Couleur brun rougeâtre, avec une bande de lignes ondulées jaunes de chaque côté de la bande dorsale qui est d'un brun rougeâtre. Les bords latéraux de tous les segments sont de couleur plus claire, mais cependant d'un brun rougeâtre. Les uropodes sont d'un jaune clair.

La tête est plus large que longue avec le bord antérieur droit. Les yeux sont petits, composés et placés très près des bords latéraux. Les antennes de la première paire sont rudimentaires et imperceptibles. Les antennes de la seconde paire ont le premier article court, le second deux fois aussi long que le premier, le troisième de longueur égale au second, le quatrième presque deux fois aussi long que le troisième; le cinquième égale en longueur le troisième et le quatrième pris ensemble. Le flagellum se compose de deux articles, dont le premier est une fois et demie aussi long que le second.

Le premier segment du thorax est une fois et demie plus long que chacun des segments suivants, qui sont subégaux. Les épimères ou coxopodites sont à peine visibles, étant représentés seulement par un bourrelet excessivement étroit longeant la partie antérieure du bord latéral du segment. Les coxopodites n'existent sur aucun des autres segments.

Les deux premiers segments de l'abdomen sont partiellement couverts latéralement par le septième segment thoracique. Les trois segments suivants ont les parties latérales bien développées. Les cinq segments sont tous presque de longueur égale. Le sixième, ou segment terminal, est triangulaire à la base, avec le sommet allongé en un long et étroit processus dont les côtés sont parallèles, l'extrémité étant arrondie.

Le pédoncule des uropodes est grand, obscurément jaune et occupe tout l'espace compris entre le processus apical du segment terminal et les angles latéraux postérieurs du cinquième segment. Il ne s'étend pas au delà du sommet du sixième segment ou des angles latéraux postérieurs du cinquième. Les angles latéraux postérieurs de l'article basilaire des uropodes



sont allongés de chaque côté; l'angle interne forme un grand lobe arrondi, l'angle externe un petit lobe plus aigu que le lobe interne. La branche externe des uropodes est grande, s'étend de moitié de sa longueur au delà du lobe interne de l'article basilaire. La branche interne s'étend jusqu'au sommet du processus apical du dernier segment abdominal.

Un seul individu a été récolté à Dallo, en Éthiopie méridionale.

Le type est au Muséum d'Histoire naturelle de Paris.

#### **HIALLIDES nov. gen.**

Flagellum des antennes de la deuxième paire composé de deux articles.

Épimères ou coxopodites du premier segment thoracique non séparés du segment. Coxopodites non séparés sur aucun des segments suivants.

Segment terminal de l'abdomen triangulaire à la base avec le sommet allongé en un processus s'étendant entre les articles basilaires des uropodes.

Branche externe des uropodes insérée presque au milieu du bord postérieur du grand article basal qui est quadrangulaire.

Le type du genre est *Hiallides minutus*.

#### **Hiallides minutus nov. sp.**

Corps ovale oblong. Couleur brune, avec des lignes ondulées jaunes sur la tête et deux bandes de chaque côté de la bande médiane dorsale jaune.

Tête grande, presque deux fois aussi large que longue. Yeux petits, composés, situés très près des bords latéraux. Devant de la tête avancé en un lobe médian arrondi.

Premier article du pédoncule des antennes de la deuxième paire court, deuxième article un peu plus long que le premier, troisième article à peu près aussi long que le second, quatrième article un peu plus long que le troisième, cinquième article environ une fois et demie aussi long que le quatrième.

Le flagellum est composé de deux articles, dont le second est environ deux fois aussi long que le premier.

Le premier segment du thorax est à peu près une fois et demie aussi long que chacun des six segments suivants qui sont subégaux. Les coxopodites ne sont distinctement séparés sur aucun des segments.

L'abdomen n'est pas plus étroit que le thorax. Les deux premiers segments ont les parties latérales couvertes par le septième segment thoracique. Les parties latérales des trois segments suivants sont bien développées. Les segments sont à peu près de longueur égale. Sixième segment, ou segment terminal, triangulaire à la base avec le sommet allongé en un processus qui s'atténue en une extrémité arrondie.

Article basilaire des uropodes grand, s'étendant au delà des parties latérales du cinquième segment abdominal, mais n'atteignant pas le sommet du processus apical du sixième segment. Le bord postérieur est excavé, avec les angles latéraux saillants de chaque côté en forme de lobes. Branche externe des uropodes longue, dépassant un peu le sommet du segment terminal de l'abdomen. La branche interne s'étend presque jusqu'au sommet de ce dernier segment.

Deux individus et l'extrémité postérieure d'un troisième ont été trouvés à Ourbon (Éthiopie méridionale).

Le type est au Muséum d'Histoire naturelle de Paris.

GENRE **Mesamardillo** Dollfus.

MESAMARDILLO Dollfus, *Ann. Soc. Ent. France*, LXI, p. 385-386, 1892. —

Budde-Lund, *A Revision of Crustacea Isopoda Terrestria*, p. 10-11, 1899.

**Mesarmadillo Buddelundi** nov. sp.

Corps ovale oblong, très convexe, contractile en boule. Surface couverte de fines granulations. Coloration d'un brun grisâtre ou d'un brun rougeâtre, avec une bande de lignes ondulées jaunes de chaque côté de la bande longitudinale médiane, qui est de la couleur du corps. Les parties latérales des segments sont d'un jaune clair.

La tête est beaucoup plus large que longue (2 millimètres — 7 millimètres), avec le front droit et marginé. Les yeux sont petits, composés et situés vers les bords latéraux. L'épistome forme un écusson triangulaire en dessus. Les antennes de la première paire sont petites. Dans celles de la deuxième paire, le premier article est court; le deuxième article, environ deux fois aussi long que le premier; le troisième est un peu plus court que le second, le quatrième un peu plus long que le second; le cinquième est de longueur égale au quatrième. Le flagellum est composé de trois articles, dont le premier est un peu plus court que les deux autres.

Le premier segment du thorax est une fois deux tiers plus long que le second, lequel est environ de même longueur que les segments suivants. Les épimères sont représentés de chaque côté par un large bourrelet s'étendant sur toute la longueur du bord latéral. Ce bourrelet est séparé de la partie dorsale par un sillon distinct. Le premier segment n'est pas sillonné sur le bord latéral, mais il y a une fissure postérieure dans laquelle le deuxième segment s'avance lorsque le corps est enroulé. Les épimères ne sont indiqués sur aucun des autres segments, si ce n'est par un léger épaississement sur la partie antérieure du côté externe du second et du troisième segments. Les cinq premiers segments de l'abdomen sont sub-égaux en longueur, mais les parties latérales du premier et du second sont

couvertes par le septième segment thoracique. Parties latérales des trois segments suivants bien développées et recourbées. Segment terminal sub-triangulaire à la base avec le sommet allongé en un large processus ayant les côtés parallèles et l'extrémité tronquée. Ce processus est deux fois aussi large que le pédoncule des uropodes. Ce pédoncule occupe tout l'espace compris entre les parties latérales courbes du cinquième segment abdominal et la partie saillante du sixième segment. Il est un peu plus long que large, avec le bord postérieur droit et les angles internes post-latéraux arrondis. La branche externe est petite et insérée à l'angle interne post-latéral du pédoncule, mais ne s'étend pas au delà du bord postérieur de ce dernier. La branche interne n'atteint pas le bord postérieur du pédoncule, qui est de même longueur que la partie saillante du dernier segment abdominal.

Cette espèce diffère de *Mesarmadillo albicornis* Budde-Lund et de *M. quadrimaculatus* Budde-Lund par la forme du segment terminal de l'abdomen, par la longueur des branches des uropodes et la différence de forme du pédoncule des uropodes. Elle diffère de *M. tuberculatus* Dollfus et de *M. marginatus* Dollfus par les mêmes caractères, ainsi que par les épimères qui sont différents.

De nombreux individus trouvés à Kounbi, Hieka, Dallo, Bourka (Éthiopie méridionale).

Le type est au Muséum d'Histoire naturelle de Paris.

Le co-type est à l'U. S. Nat. Muséum, cat. n° 38531.

***Mesarmadillo flavescens* nov. sp.**

Corps ovale oblong, convexe, contractile en boule. Surface lisse. Couleur d'un brun rougeâtre, avec une bande de lignes ondulées jaunes de chaque côté de la bande longitudinale médiane, qui est de même couleur que le corps. Parties latérales du corps jaunes. Uropodes jaunes. Épimères du premier segment distinctement jaunes.

Tête beaucoup plus large que longue (3 millimètres — 7 millimètres), avec le front droit et marginé. Yeux petits, composés et situés aux bords latéraux. Épistome légèrement convexe au centre. Antennes de la première paire très petites, presque imperceptibles. La seconde paire d'antennes manque dans le spécimen, qui est unique.

Le premier segment du thorax est plus long que chacun des segments suivants, qui sont à peu près subégaux en longueur. Épimères indiqués par un bourrelet épaissi, plus large antérieurement que postérieurement, qui s'étend sur toute la longueur du bord latéral et est séparé de la partie dorsale du segment par un profond sillon. Il n'y a pas de sillon latéral, mais il y a une fissure postérieure pas très profonde, dans laquelle le deuxième segment vient s'ajuster quand le corps est roulé en boule. Épimères du second segment indiqués à la partie antérieure par un pro-

cessus dentiforme; épimères du troisième segment représentés à la partie antérieure par un bourrelet épier.

Les cinq premiers segments de l'abdomen sont à peu près de longueur égale. Les deux premiers ont les parties latérales couvertes par le septième segment thoracique. Les parties latérales des trois segments suivants sont bien développées et recourbées. Le sixième segment, ou segment terminal, est subtriangulaire à la base avec le sommet allongé en un large et long processus dont les côtés sont légèrement convergents et l'extrémité postérieure tronquée; les angles latéraux postérieurs sont arrondis. Le pédoncule des uropodes est grand, remplissant complètement l'espace compris entre les parties latérales du cinquième segment thoracique et la partie apicale saillante du segment terminal. Il est plus long que large et à peu près de même largeur que le processus apical de ce dernier segment. L'angle externe post-latéral est largement arrondi; l'angle interne, plus aigu. Branche externe très petite, située dans une échancrure à l'angle interne post-latéral du pédoncule et non étendue au delà du bord postérieur du pédoncule. Branche interne courte n'atteignant ni le bord postérieur du pédoncule, ni l'extrémité du processus apical du sixième segment abdominal.

Un seul individu de cette espèce; il a été trouvé au mont Loroghi (Afrique orientale anglaise). Le type est au Muséum d'Histoire naturelle de Paris.

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# DESCRIPTION OF A NEW ISOPOD OF THE GENUS JÆROPSIS FROM PATAGONIA

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

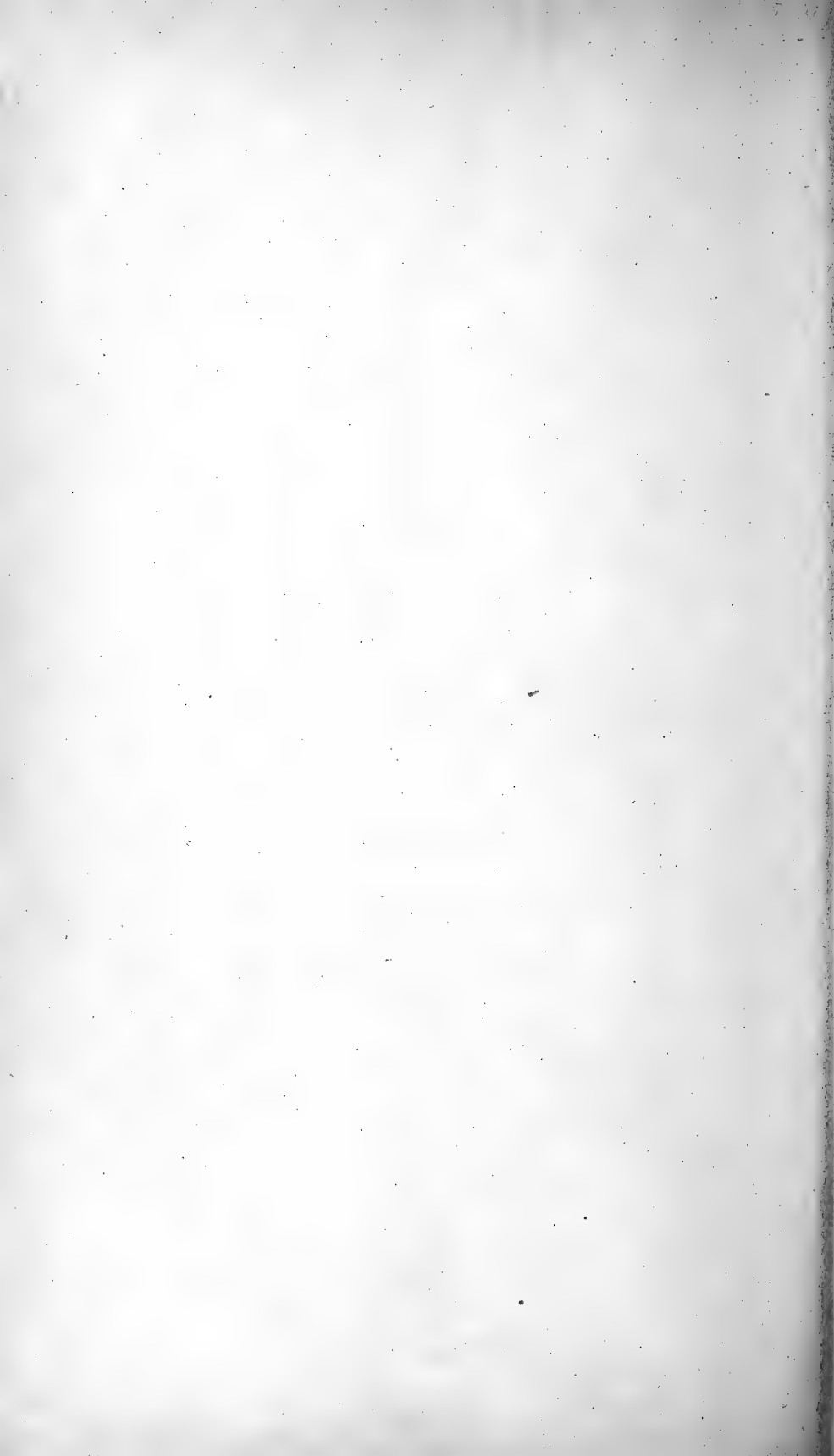
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No. 1675.—From the Proceedings of the United States National Museum,  
Vol. XXXVI, pages 421-422

Published May 13, 1909



Washington  
Government Printing Office  
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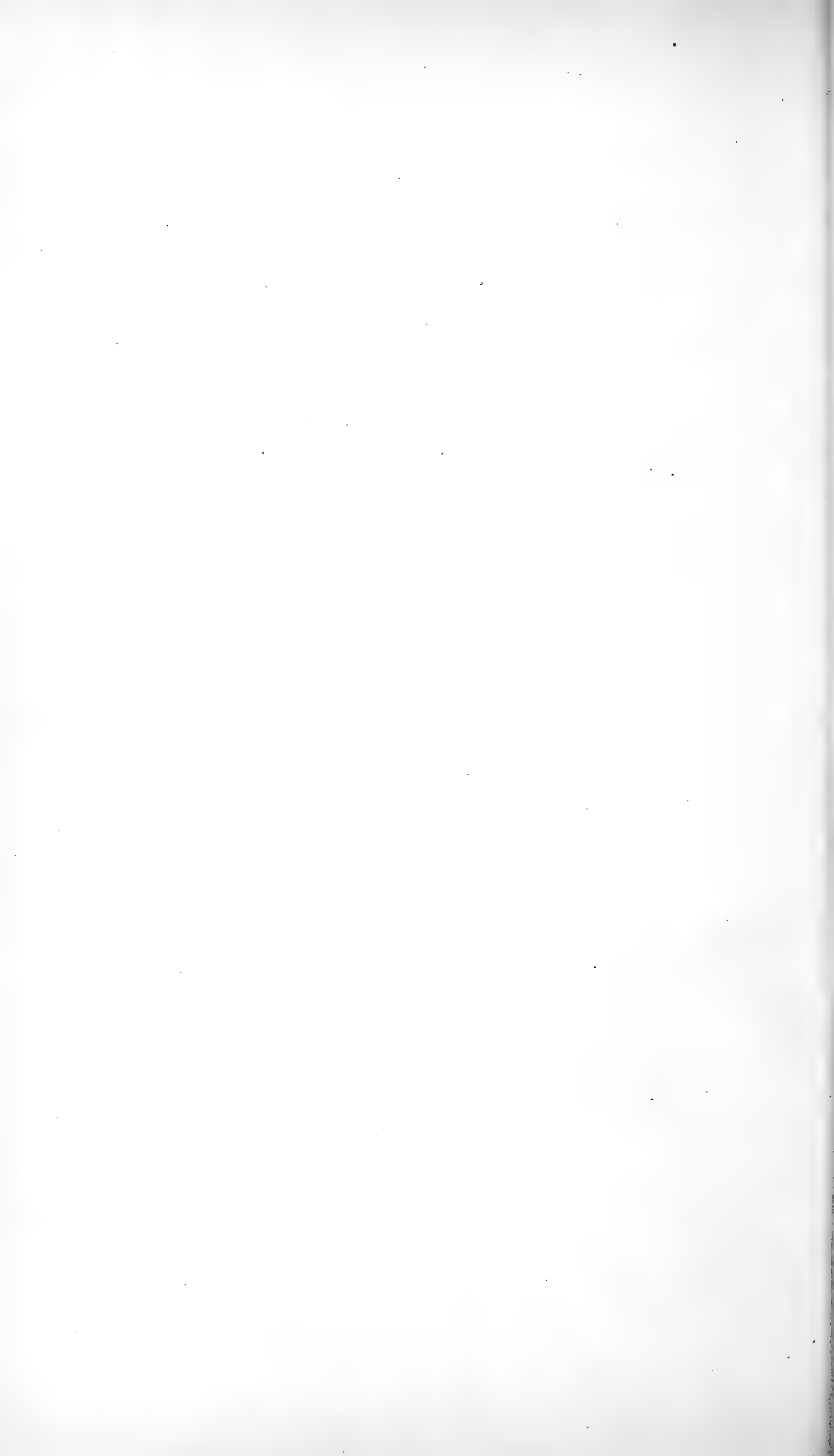
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## DESCRIPTION OF A NEW ISOPOD OF THE GENUS JÆROPSIS FROM PATAGONIA.

By HARRIET RICHARDSON,

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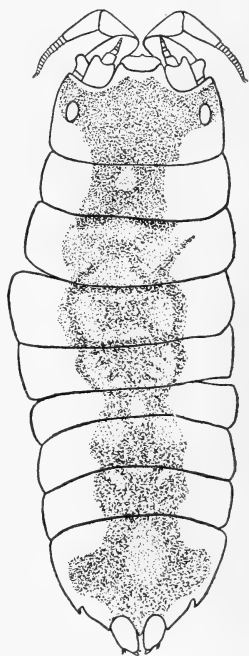
A species of *Jæropsis*, heretofore undescribed, was collected by the U. S. Bureau of Fisheries steamer *Albatross* during its cruise off the east coast of Patagonia in 1888. The list of species in this genus now includes *Jæropsis brevicornis* Kœhler,<sup>a</sup> *J. marionis* Beddard,<sup>b</sup> *J. curvicornis*<sup>c</sup> (Nicolet),<sup>d</sup> *J. lobata* Richardson,<sup>e</sup> *J. dollfusi* Norman,<sup>f</sup> *J. rathbunæ*<sup>g</sup> Richardson, and the present species.

### JÆROPSIS PATAGONIENSIS, new species.

Body oblong-ovate, about two and two-thirds times as long as wide. The lateral parts of the thoracic segments are yellow. Most of the head and most of the abdomen as well as the middle of the dorsal region of the thorax is colored reddish brown.

The head is wider than long and has the post-lateral angles rounded, the antero-lateral angles acute. The anterior margin is produced on either side of the median line in a small triangular process. In the concavity formed between the two is placed a small lobe, the anterior margin of which is produced in the middle in a small point.

The eyes are placed about halfway between the anterior and the



JÆROPSIS PATAGONIENSIS.  
× 14.

<sup>a</sup> Ann. Sci. Nat., (6), XIX, 1885, p. 7.

<sup>b</sup> Challenger Report, XVII, 1886, p. 20.

<sup>c</sup> Stebbing has recently shown that *Jæropsis neo-zealandica* Chilton is a synonym of *Jæropsis curvicornis* (Nicolet). Ceylon Pearl Oyster Fisheries Report, Pt. 4, 1905, p. 51.

<sup>d</sup> Historia de Chile, III, 1849, p. 263, pl. 3, fig. 10.

<sup>e</sup> Proc. U. S. Nat. Mus., XXI, 1899, p. 857.

<sup>f</sup> Ann. Mag. Nat. Hist., (7), IV, 1899, p. 291, pl. 5, figs. 2-8.

<sup>g</sup> Trans. Conn. Acad. Sci., XI, 1902, p. 298, pl. 40, figs. 53-55.

posterior margins of the head and a distance from the lateral margin equal to the width of one eye. The first pair of antennæ have the first article large; the second is about one-half as large as the first; the third is as long as the second, but narrower; the fourth is half as long as the third; the fifth is a little longer than the fourth; the sixth and seventh are subequal and only about half as long as the fifth. The second antennæ have the first article very short; the second is about three times longer than the first; the third is quite long, about three times longer than the second; the fourth and fifth are about equal in length and each is a little shorter than the third; the flagellum is composed of twelve articles. The antennæ are geniculate at the articulation of the third and fourth articles.

The first and fourth segments of the thorax are subequal in length; the second and third are subequal and are the longest; the fifth is the shortest; the sixth and seventh are subequal and are a little longer than the fourth but not quite as long as the third. The sides of the segments are almost straight and the epimera are not indicated.

The abdomen consists of a single segment. The posterior margin is deeply excavate on either side of an acute median point. The post-lateral angles are also acute. About one-third the distance from the post-lateral angles the sides of the abdomen are produced in a small, but pronounced tooth, just above a small excavation in the lateral margin. The uropoda are placed in the posterior excavations of the posterior margin, and consist of a large peduncle, about twice as long as wide, and a minute inner branch, tooth-like, and an outer branch, which in a dorsal view is apparent only as a bunch of hairs. In a ventral view the outer branch is placed in an excavation, is minute, and does not reach beyond the posterior margin of the peduncle.

The legs are all similar and terminate in biunguiculate dactyli.

Three specimens, all females, come from U. S. Bureau of Fisheries station 2770, east coast of Patagonia. They were collected by the steamer *Albatross* at a depth of 58 fathoms in gray sand and black specks.

*Type*.—Cat. No. 39240, U.S.N.M.





# THE ISOPOD CRUSTACEAN ACANTHONISCUS SPINIGER KINAHAN REDESCRIBED

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

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No. 1678.—From the Proceedings of the United States National Museum,  
Vol. XXXVI, pages 431-434

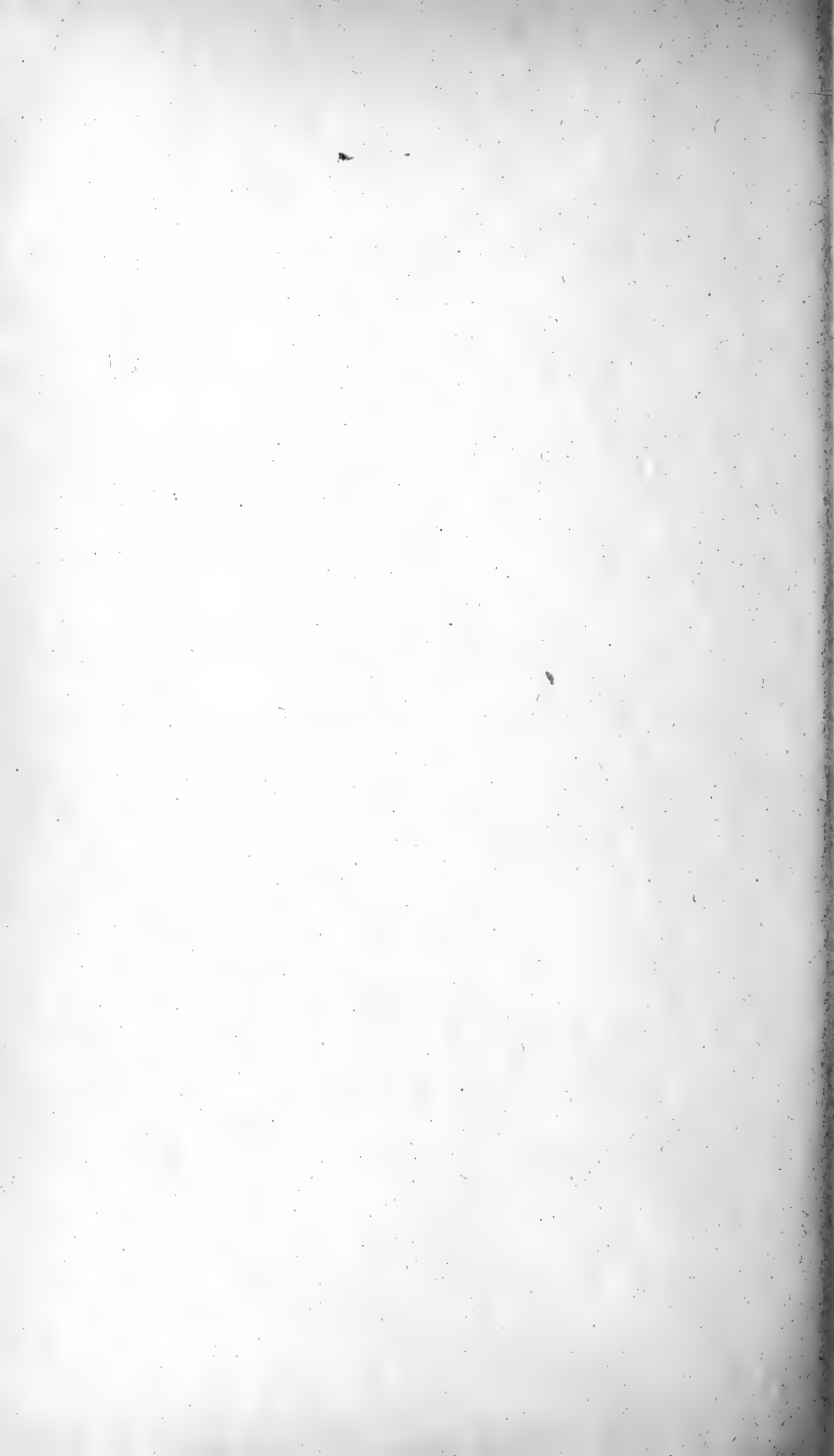
Published May 15, 1909



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1909



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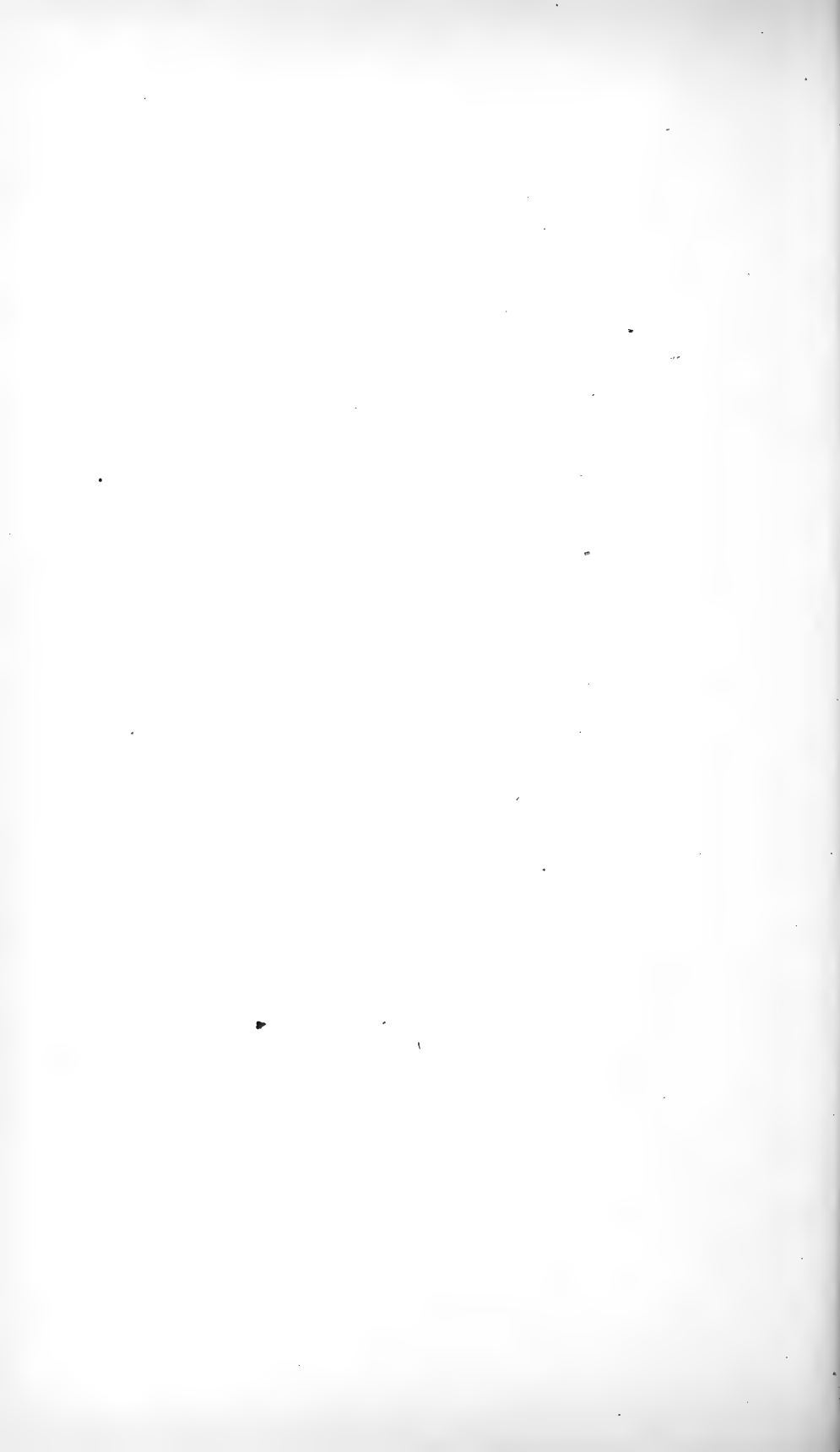
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## THE ISOPOD CRUSTACEAN ACANTHONISCUS SPINIGER KINAHAN REDESCRIBED.

By HARRIET RICHARDSON,

Collaborator, Division of Marine Invertebrates, U. S. National Museum.

In 1847 Adam White<sup>a</sup> gave the name *Acanthoniscus spiniger* to a new Isopod which Mr. Philip H. Gosse found in Jamaica. This form was not described at that time. Six years afterward the latter naturalist<sup>b</sup> referred in the following way to this isopod: "A curious little dark grey Oniscus, every segment of which is armed with two spines, was numerous; it has been described by my friend, Mr. Adam White of the British Museum, under the name of *Acanthoniscus spiniger*." The first description which was published of *Acanthoniscus spiniger* was that of Kinahan in 1859.<sup>c</sup> Kinahan's description is based on the original specimen in the British Museum, which was the only specimen he had seen. In 1885 Budde-Lund<sup>d</sup> placed in his family Onisci the genus *Acanthoniscus* of which he said: "Ad tribum Oniscorum sequentia genera in natura mihi ignota pertinere videntur." He had evidently not seen the specimen in the British Museum for he gives no description, and although he does not place the genus in either section I, *Armadilloidea*, or section II, *Oniscoidea*, yet he refers to it at the end of his section *Oniscoidea*. Kinahan did not place the genus in any family.

About 1877 Mr. H. G. Hubbard, the entomologist, made collections in Jamaica. Some of his collections were given to the Museum of Comparative Zoology and some came to the U. S. National Museum after his death. Among the insects was a specimen of *Acanthoniscus spiniger*, which was turned over to me last winter. The label accompanying it reads: "*Oniscus spiniger*. Jamaica." As I had not seen a specimen of this species before, and as the only description of it is that given by Kinahan, I thought it would be of interest to

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<sup>a</sup> List Crust. Brit. Mus., 1847, p. 99.

<sup>b</sup> A Naturalist's Sojourn in Jamaica, 1851, p. 65.

<sup>c</sup> Proc. Dublin University, I, 1859, p. 197, pl. 19, fig. 4.

<sup>d</sup> Crust. Isop. Terrestria, 1885, p. 242.

redescribe and figure it. No general figure has ever been given, although Kinahan gave detailed drawings of the uropod and the terminal abdominal segment. It seems strange that, although this isopod is said to be numerous in Jamaica, no specimens exist, so far as I know, in any museum except the British Museum.

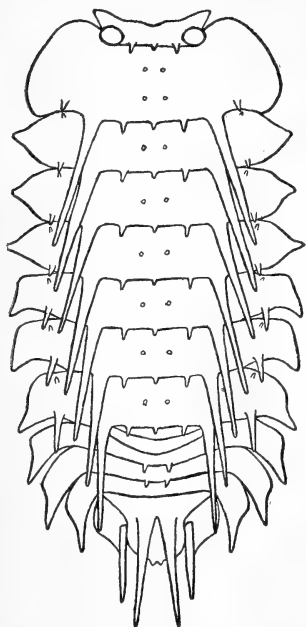


FIG. 1.—*ACANTHONISCUS SPINIGER*.

Body oblong ovate, capable of rolling up into a ball. Color, in alcohol, dark brown, with irregular spots of light brown.

Head much wider than long, with the front emarginate and the lateral angles acutely produced. The eyes are large, bulbous, composite, and situated at the post-lateral angles of the head. On the posterior margin of the head are three spines, one in the median line and one on either side, close to the eye, the median spine being smaller than the other two. The first pair of antennæ are rudimentary and inconspicuous. The second pair are broken and the flagellum lost. The first article of the peduncle is short; the second and third are long and subequal; the fourth is one and a half times longer than the third; the fifth is about one and a half times longer than the fourth.

The first segment of the thorax is longer than any of those following. The lateral parts are produced in large, rounded processes, which extend downward and upward, surrounding the posterior portion of the head. This segment is armed with two extremely long spines, one on either

### Family ARMADILLIDIDÆ.

#### *ACANTHONISCUS* Kinahan.

*Acanthoniscus* KINAHAN, Proc. Dublin University, I, 1859, p. 197.

#### *ACANTHONISCUS SPINIGER* Kinahan.

*Acanthoniscus spiniger* WHITE (*nomen nudum*), List Crust. Brit. Museum, 1847, p. 99.—GOSSE, A Naturalist's Sojourn in Jamaica, 1851, p. 65.—KINAHAN, Proc. Dublin University, I, 1859, p. 197, pl. 19, fig. 4.—BUDDELUND, Crust. Isop. Terrestria, 1885, pp. 241-242.—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 637-638, 592 footnote.

Body oblong ovate, capable of rolling up into a ball. Color, in alcohol, dark



FIG. 2.—*ACANTHONISCUS SPINIGER*. SECOND ANTENNA.  $\times 23$ . (FLAGELLUM LOST.)

side, which are nearly three times the length of the segment. Between these two spines are three short ones on the posterior margin, one being in the median line. Anterior to these spines are four small tubercles, two on either side of the median line in longitudinal series. Lateral to the long spine, halfway between it and the lateral margin, is one small spine on either side. The six following segments are about equal in length. Each is armed with two extremely long spines, one on either side of the body. Between these long spines are three small spines on the posterior margin, one in the median line. Anterior to these spines are two small tubercles, one on either side of the

median line. Lateral to these spines are two small ones, halfway between them and the lateral margin, one small anterior one and a posterior one, which gradually increases in length, that on the seventh segment being about half as long as the longest spine.

The first two segments of the abdomen have the lateral parts covered by the last thoracic segment. The lateral parts of the three following segments are greatly produced, the posterior angles being acute. These five segments are about equal in length; the third and fourth are armed with two small spines on the posterior margin, one on either side of the median line. The sixth, or terminal segment, is widest at the base, contracted

about the middle with the posterior half widely rounded and notched in the middle, a small triangular process on either side of the notch. On the anterior portion of the segment are two long spines, equal in length to twice the length of the segment, placed one on either side of the median line. The peduncle of the uropoda resembles in form the lateral parts of the third, fourth and fifth thoracic segments; the inner posterior angle is acutely produced, the outer angle being rounded. The inner branch is inconspicuous in a dorsal view, being concealed beneath the abdomen; it is attached at the inner antero-lateral angle of the peduncle and does not quite reach the tip of

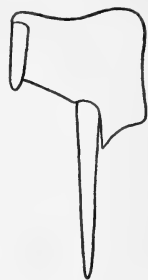


FIG. 3.—*ACANTHONISCUS SPINIGER*.  
UROPOD. (UNDER  
SIDE.)



FIG. 4.—*ACANTHONISCUS SPINIGER*.  
MAXILLIPED.  
× 27½.



FIG. 5.—*ACANTHONISCUS SPINIGER*.  
SECOND MAXILLA.  
× 77½.

the abdomen. The outer branch is produced in a long spine, extending half its length beyond the inner posterior angle of the peduncle; in a dorsal view it is inserted on the inner lateral margin at the anterior angle.



FIG. 6.—*ACANTHONISCUS SPINIGER*.  
FIRST MAXILLA. a. INNER LOBE.  
b. OUTER LOBE.  $\times 77\frac{1}{2}$ .

presence of spines on the abdomen, but in his figure of the terminal abdominal segment I think he intended to represent them in the two long lines in the center of his figure. His representation of the uropod does not agree with the specimen I have, but the shape of the terminal abdominal segment is so similar that I am inclined to think that there must be some error in the figure of the uropod.<sup>a</sup>

An anterior view of the head shows the labrum produced on either side so as to extend much beyond the epistome. The inner lamella of the first maxillæ carries two plumose processes.

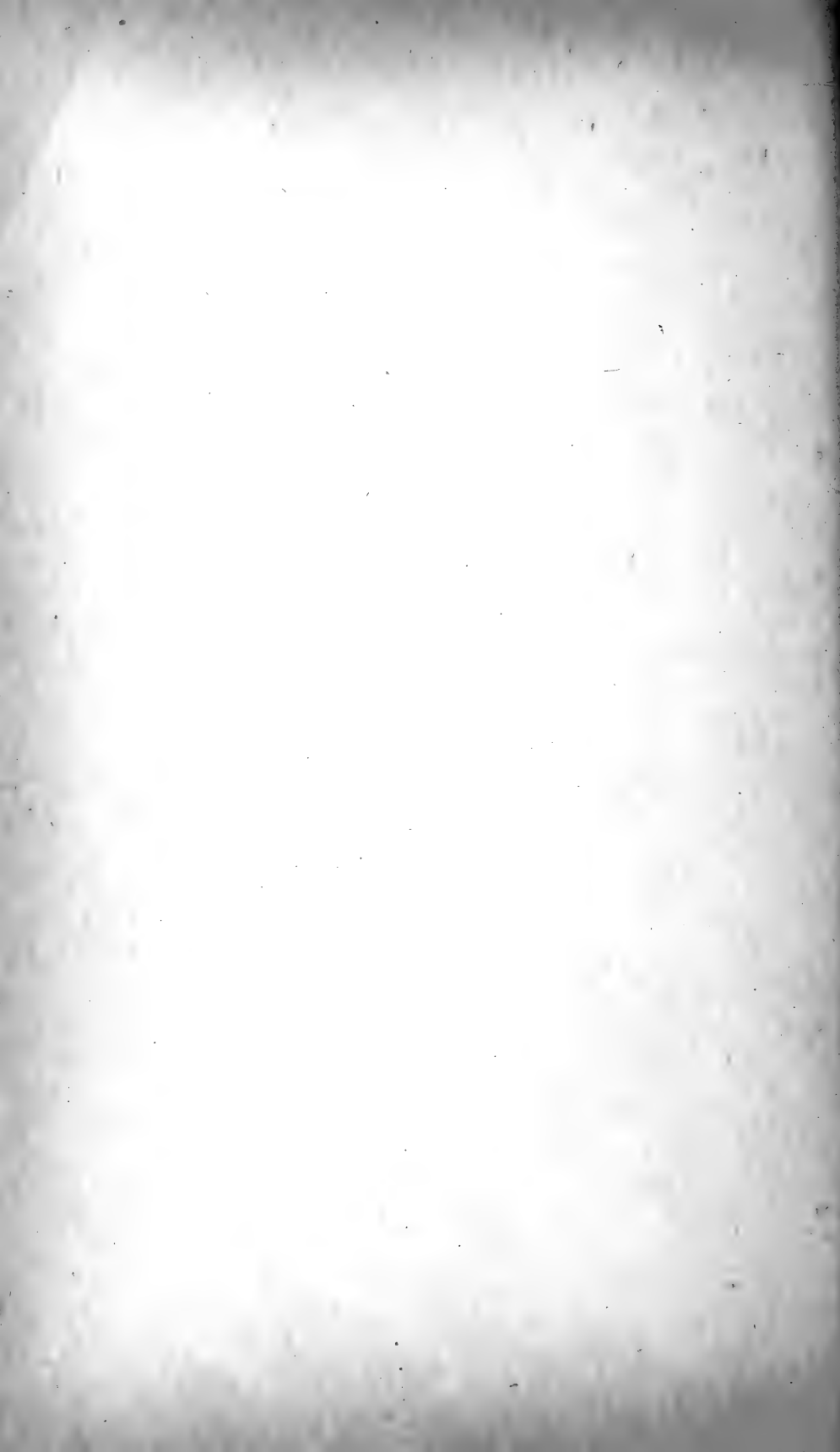
Although this specimen does not agree in every respect with the description of Kinahan, I can not but think it is the same species. Kinahan does not mention the small spines placed between the two long spines on the posterior margin of the thoracic segments. He also does not mention the

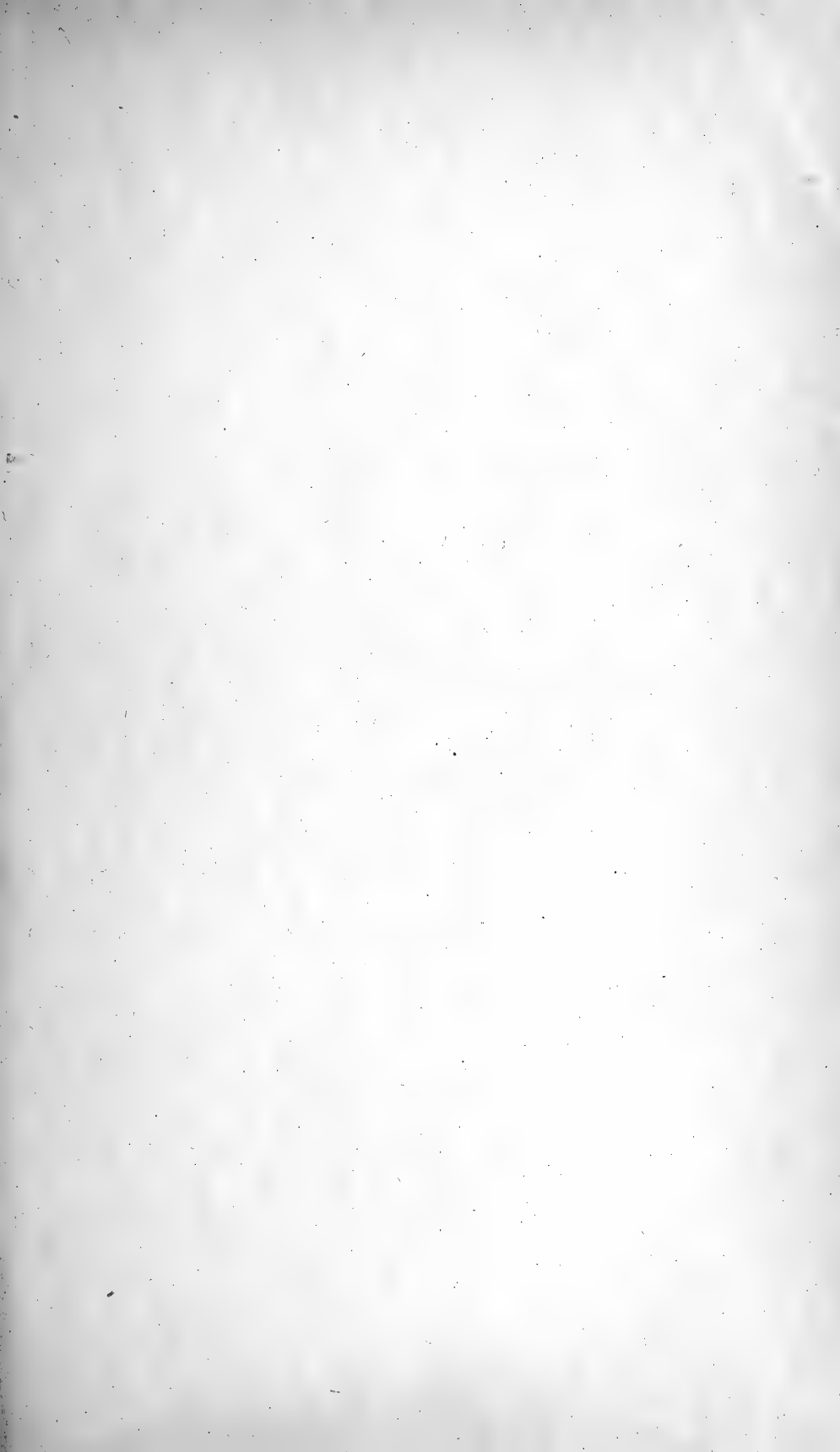


FIG. 7.—*ACANTHONISCUS SPINIGER*.  
ANTERIOR VIEW OF  
HEAD SHOWING  
EPISTOME WITH  
LABRUM.

<sup>a</sup> Since preparing the above description I sent a copy of my figure to Doctor Calman of the British Museum for comparison with the type. In his answer, just received, he says that he is almost certain that my specimen is *Acanthoniscus spiniger*. He mentions the fact that in the type-specimen there are two teeth instead of three on the posterior margin of the thoracic segments after the first. On the first segment, the middle tooth is extremely small. On the hinder edge of the head are only two teeth, placed a little in front of, not on, the margin. He also noticed a difference in the shape of the uropod, but thinks this may be due to its being in a slightly different position from my sketch. He very kindly made drawings of the type for me. Although I am aware of these discrepancies, I hesitate to consider my specimen other than *Acanthoniscus spiniger* when the resemblance is so strong and the locality the same. Moreover the type-specimen is probably a dried specimen and some allowance must be made for change in contour owing to its condition. When Kinahan described it, twelve years after it was collected, it was probably in no better condition than it is now.











12

12

ISOPODS COLLECTED IN THE NORTHWEST  
PACIFIC BY THE U. S. BUREAU OF FISH-  
ERIES STEAMER "ALBATROSS"  
IN 1906

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

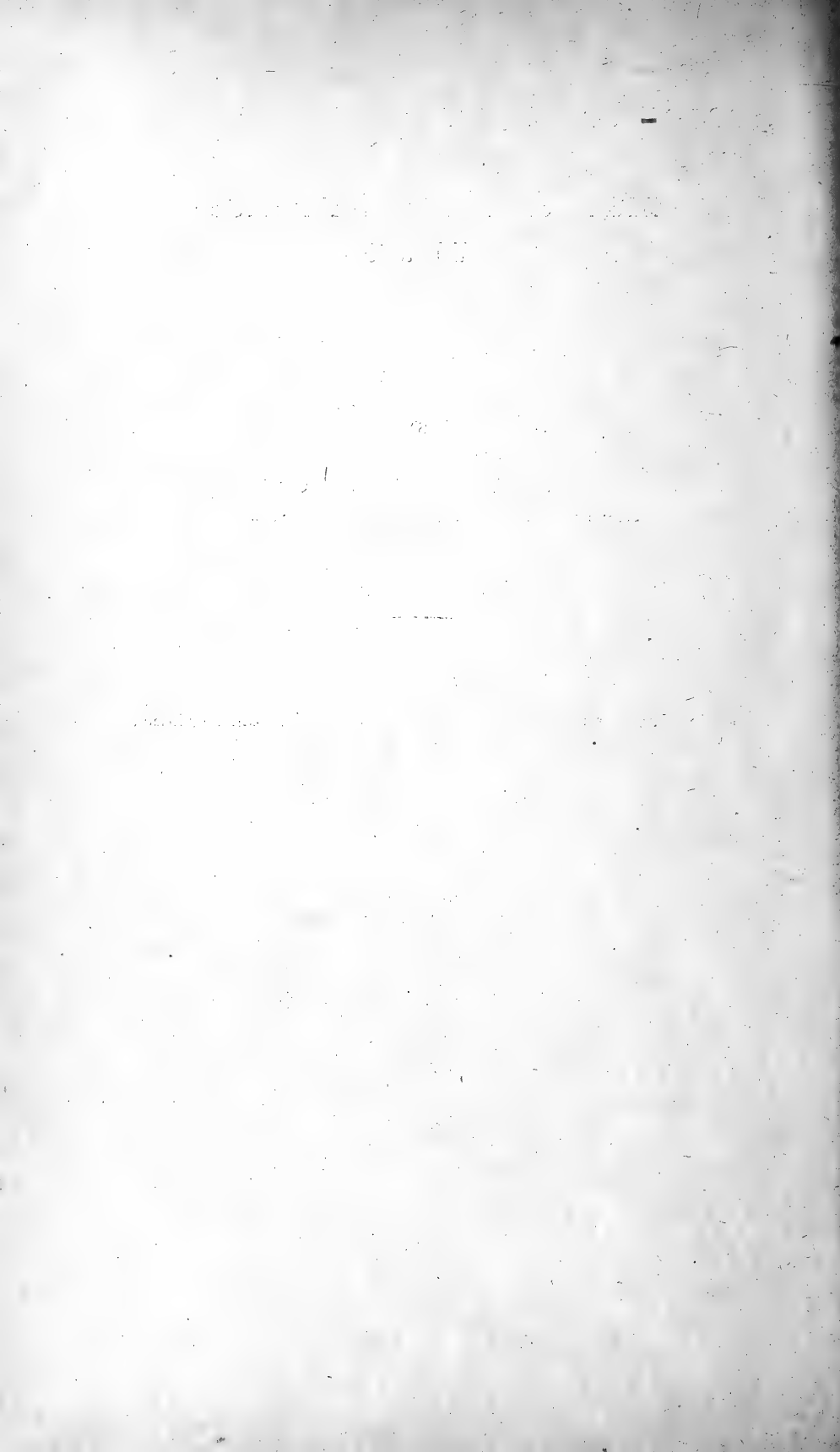
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1909



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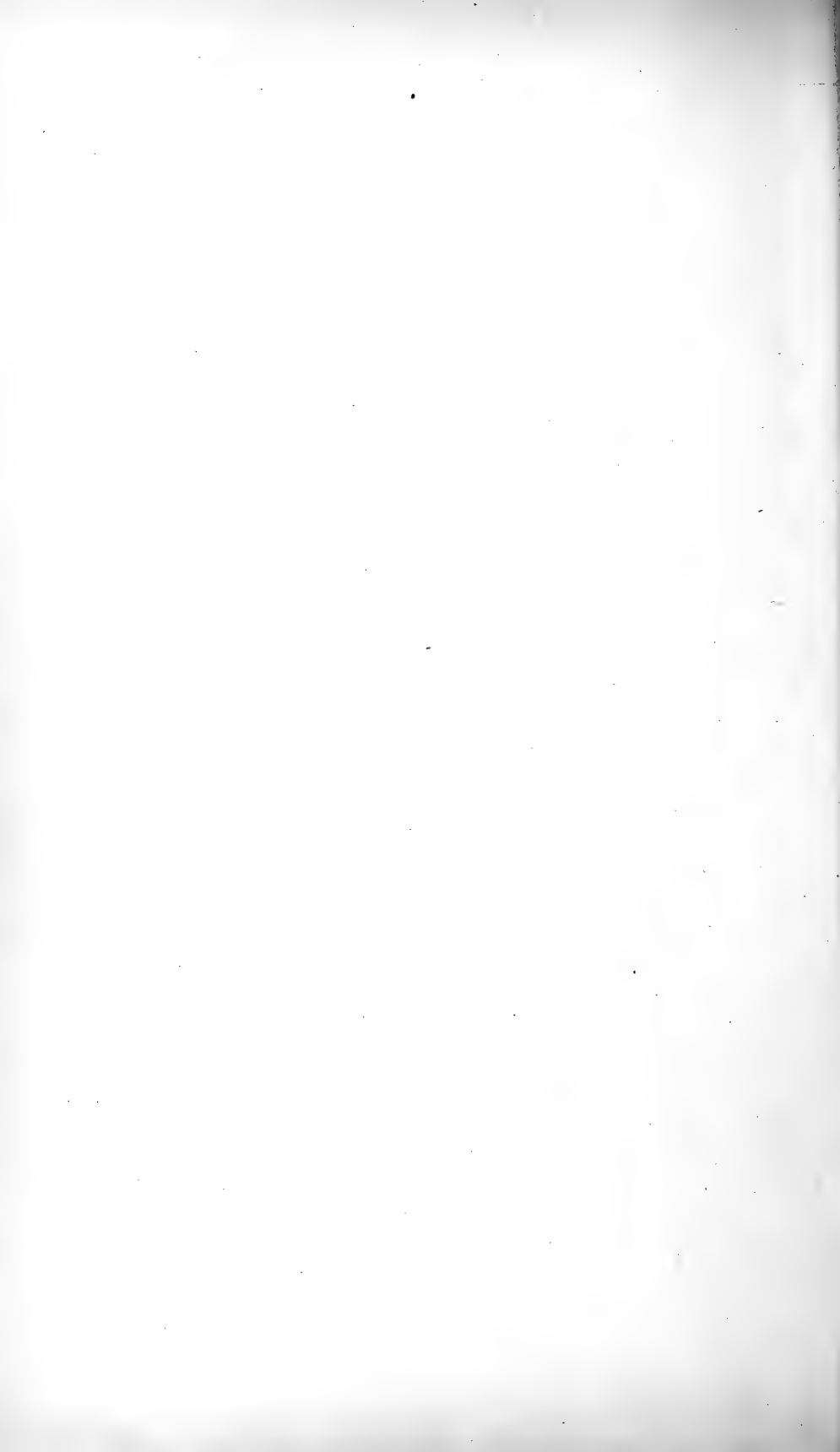
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ISOPODS COLLECTED IN THE NORTHWEST PACIFIC BY  
THE U. S. BUREAU OF FISHERIES STEAMER "ALBATROSS" IN 1906.

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By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

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The following report is of the Isopoda collected by the U. S. Bureau of Fisheries steamer *Albatross* during its cruise in 1906, from San Francisco to Alaska, the Aleutian Islands, Bering Sea, Kamchatka, Japan, etc. A large number of specimens were obtained, including known species and twenty-nine new ones. The new forms are herein described and a list of the known species given with their stations. References to the literature are to be found at the end of the paper.

CYMOTHOIDEA or FLABELLIFERA.

Family GNATHIIDÆ.

Genus GNATHIA Leach.

GNATHIA TUBERCULATA, new species.

Body oblong, ovate.

Head large, squarish, with the anterior margin produced in a rounded lobe and the antero-lateral angles acute. The eyes are small, round, composite, and situated at the base of the antero-lateral angles of the head. The surface of the head is granulate and covered with numerous small spines.

The first pair of antennæ have the first two articles short and subequal; the third is twice as long as the second; the flagellum is composed of five articles. The second pair of antennæ have the basal article short, the last two articles elongate; the flagellum is composed of seven articles. The mandibles are large and conspicuous, and project straight in front, with their inner edges contiguous along the middle and the tips crossing. There is a small dentation about the middle of the outer margin.

On the ventral side of the head the anterior margin is provided with four spines on either side close to the antennæ and within them.

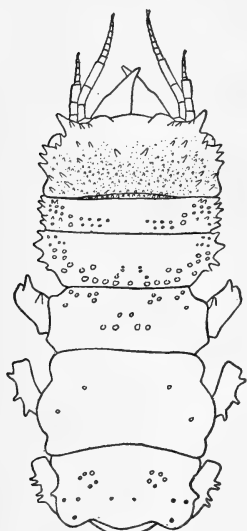


FIG. 1.—GNATHIA TUBERCULATA. HEAD AND THORAX.  $\times 14\frac{1}{2}$ .

The first segment of the thorax is short and narrow and almost inconspicuous. The second segment is about half as long as the third, but is equally wide. The second is covered with small spines and tubercles, the third at the sides and on the posterior half. The fourth segment is a little longer than the third and a little narrower; it is also furnished with tubercles. The fifth segment is one and a half times longer than the fourth and has only a very few tubercles on the dorsal surface. The sixth segment is a little shorter and a little narrower than the fifth segment and is furnished with but few tubercles, more, however, than on the fifth segment. The seventh segment is short and almost inconspicuous.

The abdomen is abruptly about half as wide as the sixth thoracic segment. The five anterior segments are subequal. The terminal

segment is produced to a long, narrow extremity. The inner angle of the peduncle of the uropoda is produced and extends about half the length of the inner branch. The branches are similar in shape and size, the inner one being a little longer than the outer and also a little longer than the tip of the terminal segment of the abdomen. Both are fringed with long hairs.



FIG. 2.—GNATHIA TUBERCULATA. ANTERIOR MARGIN OF HEAD (VENTRAL).  $\times 27\frac{1}{2}$ .

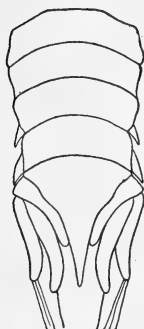


FIG. 3.—GNATHIA TUBERCULATA. ABDOMEN.  $\times 27\frac{1}{2}$ .

The fourth pair of legs have the basis furnished with two long spines, one being at the distal extremity and the other about the middle; the ischium is furnished with one spine and the merus with one. The fifth pair have the basis furnished with three spines on the exterior margin; the ischium is furnished with one spine and the merus with one. The sixth pair have the basis furnished with four spines. (The rest of the leg is lost in the only specimen.) The first pair of legs are modified into an operculum covering the mouth parts; each appendage is composed of three articles, the last one being minute.

Only one specimen, a male and imperfect, comes from station 4831, on the way from Nanao, Hondo, Japan, to Isuruga, Hondo, Japan,

at Sudzu Misaki Light, N.  $68^{\circ}$  W., 24 miles (lat.  $37^{\circ} 22' 30''$  N.; long.  $137^{\circ} 47'$  E.) at a depth of 619 fathoms in green mud.

*Type-specimen*.—Cat. No. 39496, U.S.N.M.

### Family ANTHURIDÆ.

#### Genus PARANTHURA Bate and Westwood.

##### PARANTHURA JAPONICA, new species.

Body narrow, elongate. Color, in alcohol, yellow, with irregular markings of black.

Head about as long as wide, 1 mm.: 1 mm. Anterior margin excavate and with a small median point. Eyes rather large, round, composite and placed in the antero-lateral angles.

The first pair of antennæ have the first article of the peduncle elongate; the second and third are subequal in length, and both together are not longer than the first article; the flagellum consists of four articles, the last of which is minute. The second pair of antennæ have the second article elongate; the third and fourth short and subequal, and both together not longer than the second; the fifth is about one and a half times longer than the fourth; the flagellum consists of a single, tapering article, furnished with hairs.

The first five segments of the thorax are subequal in length, each being  $1\frac{1}{2}$  mm. long. The sixth segment is shorter, being only 1 mm. long.

The seventh is half as long as the sixth, being  $\frac{1}{2}$  mm. in length.

The first five segments of the abdomen taken together are equal in

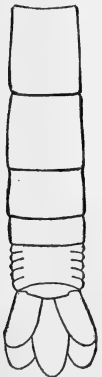


FIG. 5.—PARANTHURA JAPONICA. LAST FOUR SEGMENTS OF THORAX AND ABDOMEN.  $\times 9\frac{3}{4}$ .



FIG. 4.—PARANTHURA JAPONICA. HEAD AND FIRST THREE SEGMENTS OF THORAX.  $\times 9\frac{3}{4}$ .

length to the sixth thoracic segment. These segments are all fused in the middle of the dorsal region but are distinct at the sides. The sixth segment is almost as long as half the length of the other five segments taken together. The telson is liguiform, with the posterior extremity rounded. The peduncle of the uropoda extends about three-fourths the length of the terminal abdominal segment. The inner branch is short, rounded posteriorly, and does not extend beyond the extremity of the terminal abdominal segment. The outer branch arches over the telson and is as long as the peduncle of the uropoda.

The first three pairs of legs are prehensile, the first pair being stouter and larger than the others. The last four pairs are ambulatory.

Only one specimen, a female, was collected at Mororan, Japan, on the shore.

*Type-specimen*.—Cat. No. 39497, U.S.N.M.

### Family CIROLANIDÆ.

Genus BATHYNOMUS A. Milne Edwards.

BATHYNOMUS DODERLEINI Ortmann.

*Bathynomus döderleini* ORTMANN, Proc. Acad. Nat. Sci. Phila., 1894, pp. 191–193.—BOUVIER, C. R. Acad. Sci., vol. 132, pp. 643–645.—A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zool. Harvard College, vol. 22, No. 2, 1902, pp. 159–165, pls. 7, 8.

*Locality*.—Two fine specimens were collected at station 5067, in Suruga Gulf, Japan, at Ose Saki, 50° E., 6.5 miles (lat. 35° 05' 50'' N.; long. 138° 41' 15'' E.).

*Depth*.—Two hundred and ninety-three fathoms in broken sand and shells.

The type-specimens of this species were collected in Sagami Bay, near Enoshima, Japan. The flagelli of the second pair of antennæ were broken in both specimens, the longest fragment being composed of 25 articles and reaching to the end of the first segment of the thorax. In the two perfect specimens obtained by the Bureau of Fisheries steamer *Albatross*, the flagelli are entire and extend to the posterior margin of the fourth thoracic segment in one specimen and almost to the posterior margin of the fifth thoracic segment in the other specimen. The articles in the flagellum number about 73.

### Family CORALLANIDÆ.

Genus ALCIRONA Hansen.

ALCIRONA NIPONIA, new species.

Body narrow, elongate, nearly three times as long as wide (4 mm.: 11 mm.). Surface smooth. Color, in alcohol, pale yellow.

Head twice as wide as long (1 mm.: 2 mm.). Anterior margin widely rounded. Eyes small, round, composite, and situated in the post-lateral angles. The first pair of antennæ have the first two articles of the peduncle short and subequal; the third is about one and a half times longer than the first two combined; the flagellum is composed of about 11 articles and does not quite reach the posterior margin of the first thoracic segment. The second antennæ, with a flagellum of 19 articles, extend to the posterior margin of the third thoracic segment.

The segments of the thorax are about equal in length with the exception of the first, which is a little longer. Epimera are present on all the segments, except the first; those of the second and third



segments do not extend beyond the posterior margin of the segment and are quadrangular; those of the last four segments have the outer post-lateral angle produced so that they extend beyond the posterior margin of the segment, each being increasingly longer. Each epimeron is furnished on the outer post-lateral angle with a bunch of long hairs, a most conspicuous feature.

The first two segments of the abdomen are entirely concealed. The three following are short and subequal. The terminal segment is triangular, with apex rounded. The inner branch of the uropoda is about twice as wide as the outer branch and is a little longer. It is widely rounded posteriorly and extends a little beyond the tip of the abdomen. Both branches, as well as the terminal segment of the abdomen, are furnished with hairs and a few spines.

The first three pairs of legs are prehensile, the other four pairs ambulatory. In the first pair of prehensile legs the merus is armed with four blunt spines, the carpus with one, the propodus with seven rounded teeth, and the dactylus with four low rounded serrations.

Only one specimen, a male, was collected at station 4879, in the eastern channel of Korea Strait, vicinity of Oki Shima, S.  $70^{\circ}$  W., 7.5 miles (lat.  $34^{\circ} 17'$  N.; long.  $130^{\circ} 15'$  E.), at a depth of 59 fathoms in fine gray sand and broken shells.

This species is very close to *Alcirona insularis* Hansen<sup>a</sup> from Samoa, but differs in the character of the prehensile legs, in having a bunch of hairs on each epimeron at the outer post-lateral angle, and in having the first two segments of the abdomen entirely concealed.

*Type-specimen*.—Cat. No. 39498, U.S.N.M.

### Family ÆGIDÆ.

#### Genus ÆGA Leach.

#### ÆGA SYMMETRICA Richardson.

*Æga symmetrica* RICHARDSON, Bull. U. S. Bureau of Fisheries, vol. 24, 1905, pp. 211–212; Bull. U. S. Nat. Mus., No. 54, 1905, pp. 185–187.

*Localities*.—Station 4771, on "Bowers Bank," Bering Sea, at lat.  $54^{\circ} 30'$  N.; long.  $179^{\circ} 17'$  E., and station 4772, at lat.  $54^{\circ} 30' 30''$  N.;

<sup>a</sup> Vidensk. Selsk. Skr. 6te Række, naturvidenskabelig og matematisk Afd., vol. 5, pt. 3, 1890, pp. 393–395, pl. 8, figs. 2–2n.



FIG. 6.—ALCIRONA NIPONIA. LEG OF FIRST PAIR.  $\times 27\frac{1}{2}$ .

long.  $179^{\circ} 14'$  E.; station 4781, on the way from "Petrel Bank," Bering Sea, to McDonald Bay, Agattu Island, Aleutians, by the passage east of Semisopochnoi and Amchitka Islands, at lat.  $52^{\circ} 14' 30''$  N.; long.  $174^{\circ} 13'$  E.

*Depth*.—Three hundred and forty-four to four hundred and eighty-two fathoms in fine gray sand and pebbles, in green and brown sand, and in broken shells.

*ÆGA MAGNOCULIS*, new species.

Body ovate, about twice as long as wide (11 mm. : 21 mm.). Surface smooth. Color, in alcohol, yellow.

Head wider than long,  $2\frac{1}{2}$  mm. long by  $5\frac{1}{2}$  mm. wide. Front produced in a small median point, separating the basal articles of the first antennæ. Eyes large, oval, occupying almost the entire surface of the head, and separated from each other by a distance equal to half a millimeter. The first pair of antennæ have the two basal articles not dilated, and subequal; the third is narrow, elongate, and equal in length to the first two articles taken together; the flagellum is composed of eighteen articles. The first antennæ extend to the posterior margin of the first thoracic segment. The second antennæ, with a flagellum of twenty-one articles, extend to the posterior margin of the third thoracic segment. The frontal lamina is conical, with the distal end flat and ovate, the proximal end produced to a point.



FIG. 7.—*ÆGA MAGNOCULIS*. HEAD AND FIRST TWO SEGMENTS OF THORAX.  $\times 3\frac{1}{2}$ .

The segments of the thorax are subequal, the last one being slightly shorter than the others.

The epimera are large, subquadrate, with the outer post-lateral angle acute and produced posteriorly in the last three segments beyond the posterior margin of the segments.

The first segment of the abdomen is almost entirely covered by the seventh thoracic segment, especially in the middle dorsal region; the following three segments are subequal; the fifth segment is slightly longer in the middle dorsal region; the sixth or terminal segment is rounded, with the apex produced in a small point, on either side of which the posterior margin is serrulate. The uropoda extend a little beyond the terminal abdominal segment; the inner branch is slightly longer than the outer branch, is also wider and has the posterior margin obliquely truncate, with the outer angle produced acutely; the outer branch is ovate with the posterior extremity acute. Both branches have the margins serrulate.

The first three pairs of legs are prehensile. There is one small spine at the distal extremity of the propodus, and one larger spine on the carpus. A few small spines are also on the merus. The last

four pairs of legs are ambulatory and are furnished with a few spines and hairs.

Nine specimens of this species come from the following localities: Station 4772, on "Bowers Bank," Bering Sea, at lat.  $54^{\circ} 30' 30''$  N.; long.  $179^{\circ} 14'$  E., and station 4771, at lat.  $50^{\circ} 30'$  N.; long.  $179^{\circ} 17'$  E.; station 4781, on the way from "Petrel Bank," Bering Sea, to McDonald Bay, Agattu Island, Aleutians, by the passage east of Semisopochnoi and Amchitka Islands, at lat.  $52^{\circ} 14' 30''$  N.; long.  $174^{\circ} 13'$  E., at a depth of 344–482 fathoms in broken shells, brownish-green sand, and fine gray sand and pebbles.

This species is very close to *Æga symmetrica* Richardson, but differs in the much larger and oval eyes, which are also closer together, in the greater number of articles in the flagellum of both pairs of antennæ, and the longer second antennæ, and in the lesser number of spines on the prehensile legs.

*Type-specimen*.—Cat. No. 39499, U.S.N.M.

One specimen from station 4906, 10–20 miles southwest of Koshika Islands, Eastern Sea, at Tsurikake Saki Light, S.  $85^{\circ}$  E., 17.2 miles (lat.  $31^{\circ} 39'$  N.; long.  $129^{\circ} 20' 30''$  E.), taken at a depth of 369 fathoms, I have doubtfully referred to this species. It differs from the other specimens in the less oval eyes, in the shorter second antennæ, which extend to the posterior margin of the second thoracic segment, and in the narrower and longer body, being  $8\frac{1}{2}$  mm. :20 mm. In color it is reddish brown.



FIG. 8.—ÆGA SYNOPHTHALMA. HEAD AND FIRST TWO SEGMENTS OF THORAX.  $\times 3\frac{1}{2}$ .

#### ÆGA SYNOPHTHALMA, new species.

This species is very similar to the preceding, but differs in having the eyes confluent and not separated from each other; in having the first antennæ, with a flagellum of only 12 articles, extending to the middle of the first thoracic segment; in having the second antennæ, with a flagellum of 16 articles, extending to the middle of the third thoracic segment; in having the outer post-lateral angles of the first three epimera rounded and not acute; and in having the distal end of the frontal lamina rounded and not flat, and more circular in outline instead of oval.

Only one specimen comes from station 5091, in Uraga Strait (entrance Gulf of Tokyo), at Joga Shima Light; N.  $15^{\circ}$  W., 4.2 miles (lat.  $35^{\circ} 04' 10''$  N.; long.  $139^{\circ} 38' 12''$  E.), at a depth of 197 fathoms in green mud and coarse, black sand and pebbles.

*Type-specimen*.—Cat. No. 39500, U.S.N.M.

## Genus ROCINELA Leach.

## ROCINELA CORNUTA Richardson.

*Rocinela cornuta* RICHARDSON, Proc. Amer. Philos. Soc., vol. 37, 1898, p. 12, figs. 1-2; Proc. U. S. Nat. Mus., vol. 21, 1899, p. 827; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 169; American Naturalist, vol. 34, 1900, p. 219; Bull. U. S. Nat. Mus., No. 54, 1905, pp. 192-193.

*Locality*.—Station 4772, on "Bowers Bank," Bering Sea, lat.  $54^{\circ} 30' 30''$  N.; long.  $179^{\circ} 14'$  E.

*Depth*.—Three hundred and forty-four fathoms in green and brown sand. Only one specimen found. This is the only one, besides the type-specimen, which has been taken.

## ROCINELA BELLICEPS (Stimpson).

*Aga belliceps* STIMPSON, Proc. Acad. Nat. Sci., Phila., vol. 16, 1864, p. 155.

*Aga alascensis* LOCKINGTON, Proc. Cal. Acad. Sci., vol. 7, 1877, pt. 1, p. 46.

*Rocinela alascensis* RICHARDSON, Proc. Amer. Philos. Soc., vol. 37, 1898, p. 11.

*Rocinela belliceps* RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 827; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 169; American Naturalist, vol. 34, 1900, p. 219; Harriman Alaska Expedition, Crust., vol. 10, 1904, p. 214; Proc. U. S. Nat. Mus., vol. 27, 1904, p. 659; Bull. U. S. Bureau of Fisheries, vol. 24, 1905, p. 213; Bull. U. S. Nat. Mus., No. 54, 1905, pp. 199-201.

*Localities*.—Unalaska; Nazan Bay, Atka; station 4782, on the way from Agattu Island to Chichagof Harbor, Attu Island, by the Semichi Islands, Aleutians, at East Cape, Attu Island, S.  $22^{\circ}$  W., 4 miles (lat.  $52^{\circ} 55'$  N.; long.  $173^{\circ} 27'$  E.); station 4784, on the way from Chichagof Harbor, Attu Island, around eastern end and south of Attu Island to Preobrajleniya Bay, Medni Island, Komandorski Islands, at East Cape, Attu Island, S.  $18^{\circ}$  W., 4 miles (lat.  $52^{\circ} 55' 40''$  N.; long.  $173^{\circ} 26'$  E.); station 4803, on the way from Milne Bay, Simushir Island, Kuril Islands, to Hakodate, Hokkaido, Japan, by the Boussole Strait, at Cape Rollin, Simushir Island, N.  $59^{\circ}$  W., 9 miles (lat.  $46^{\circ} 42'$  N.; long.  $151^{\circ} 45'$  E.) and station 4804, N.  $58^{\circ}$  W., 9.7 miles (lat.  $46^{\circ} 42'$  N.; long.  $151^{\circ} 47'$  E.); station 4812, on the way from Hakodate, Japan, to Ebisu, Sado Island, Sea of Japan (by the Tsugaru Strait), at north point Sado Island, S.  $31^{\circ}$  W., 15 miles (lat.  $38^{\circ} 33'$  N.; long.  $138^{\circ} 40'$  E.); station 4860, on the way from Matsu Shima, Sea of Japan, to Nagasaki, Japan, at C. Clonard, S.  $23^{\circ}$  W., 13 miles (lat.  $36^{\circ} 18'$  N.; long.  $129^{\circ} 44'$  E.); station 4779, on "Petrel Bank," Bering Sea, at Semisopochnoi Island, r. t. S.  $59\frac{1}{2}^{\circ}$  W., l. t. S.  $37^{\circ}$  W. (lat.  $52^{\circ} 11'$  N.; long.  $179^{\circ} 57'$  W.).

*Depth*.—Shore; 54-229 fathoms in green mud, fine brown mud, black sand, coarse pebbles, rocks, gravel, broken shells.

*Remarks.*—There are four spines on the propodus of the prehensile legs in these specimens.

ROCINELA ANGUSTATA Richardson.

*Rocinela laticauda* RICHARDSON (not HANSEN), Proc. Amer. Philos. Soc., vol. 37, 1898, pp. 14–15, figs. 5–6; Proc. U. S. Nat. Mus., vol. 21, 1899, p. 828 (part).

*Rocinela angustata* RICHARDSON, Proc. U. S. Nat. Mus., vol. 27, 1904, p. 33; Bull. U. S. Bureau of Fisheries, vol. 24, 1905, p. 214; Bull. U. S. Nat. Mus., No. 54, 1905, pp. 206–207.

*Locality.*—Station 5036, south coast of Hokkaido at Urakawa light, N.  $44\frac{1}{2}^{\circ}$  E., 16.8 miles (lat.  $41^{\circ} 58' N.$ ; long.  $142^{\circ} 30' 30'' E.$ ); station 5045, at lat.  $42^{\circ} 11' 10'' N.$ ; long.  $142^{\circ} 12' E.$

*Depth.*—359–464 fathoms in brown mud, fine black sand and in coral and sand.

ROCINELA MACULATA Schiødte and Meinert.

*Rocinela maculata* SCHIØDTE and MEINERT, Naturhistorisk Tidsskrift (3), vol. 12, 1879–80, p. 393, pl. 12, figs. 10–12; vol. 14, 1883–84, p. 413, pl. 18, fig. 13.—BOVALLIUS, Bihang till Kgl. Sv. Vet. Akad. Handling., vol. 10, No. 11, 1885, p. 10, pl. 2, figs. 18–23.—HANSEN, Vidensk. Meddel. naturh. Foren. i Kjøbenhavn, 1887, p. 187.—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 198–199.

*Locality.*—Station 4807, on the way from Hakodate, Japan, to Ebisu, Sado Island, Sea of Japan (by the Tsugaru Strait) at Cape Tsiuka, S.  $58^{\circ} W.$ , 10.3 miles (lat.  $41^{\circ} 36' 12'' N.$ ; long.  $140^{\circ} 36' E.$ ).

*Depth.*—Forty-four fathoms, in shells and coarse gravel. This species has been recorded from West Greenland, Vladivostok, Kamtchatka, and east Asia.

The specimen taken by the Bureau of Fisheries steamer *Albatross* has a black spot on the fourth and fifth segments of the abdomen on either side as well as on the last segment at the base. The spines on the propodus are not as long as mentioned in the description of the type by Schiødte and Meinert.

ROCINELA NIPONIA, new species.

Body ovate, a little more than twice as long as wide ( $8\frac{1}{2}$  mm.: 18 mm.).

Head triangular in shape, 2 mm. long and 3 mm. wide, with the front produced in a broad median triangular process. Eyes large, composite, and separated in front by a distance equal to the length of one eye. The first pair of antennæ extend to the posterior margin of the head and almost to the end of the peduncle of the second antennæ; the flagellum is composed of six articles, the first one of which is twice as long as the second and the two terminal ones minute. The



FIG. 9.—ROCINELA NIPONIA. HEAD AND FIRST TWO SEGMENTS OF THORAX.  $\times 3\frac{1}{2}$ .

second antennæ extend to the posterior margin of the second thoracic segment; the flagellum is composed of sixteen articles.

The first, second, and seventh segments of the thorax are about equal in length; the third, fourth, fifth, and sixth are slightly longer. The epimera of the second and third segments are posteriorly rounded; those of the four following segments are posteriorly acute, and in the last three segments are produced beyond the posterior margins of the segments.

The first segment of the abdomen is covered in the middle by the last thoracic segment, but is visible at the sides; the three following segments are subequal; the fifth segment is narrower than any of the preceding segments, but is longer in the middle portion of the dorsal surface. The sixth or terminal segment is posteriorly tri-angulate, with the margin furnished with short spines and hairs.



FIG. 10.—ROCINELA NIPONIA. THIRD LEG.  
× 14½.

The uropoda do not extend beyond the extremity of the abdomen; the outer branch is slightly shorter and slightly narrower than the inner branch; they are both armed with spines and furnished with hairs. The posterior extremity of the inner branch is more rounded than the outer branch.

The propodus of the first pair of prehensile legs is produced in a palmar process furnished with a marginal row of ten curved spines; the two following pairs of legs have eight spines on the propodus; the carpus is furnished with one long spine; the merus is furnished with five long spines, the most anterior one being very long, almost twice as long as the others. The last four pairs of legs are also furnished with numerous spines.

Only one specimen, a female, was collected at station 4815, on the way from Hakodate, Japan, to Ebisu, Sado Island, Sea of Japan, at Niigata Light, S. 25° E., 21.5 miles (lat. 38° 16' N.; long. 138° 52' E.), at a depth of 70 fathoms, in dark green sand.

This species is very close to *Rocinela propodialis* Richardson, but differs in having 10 spines on the palmar process of the propodus of the first pair of legs and 8 on the next two instead of 6 teeth; in having five long, sharp spines on the merus instead of five low, blunt ones; in having the posterior margin of the abdomen triangulate instead of rounded; and in having the last three epimera produced beyond the posterior margins of the segments instead of only the last.

*Type-specimen*.—Cat. No. 39501, U.S.N.M.

## Genus SYSCENUS Harger.

## SYSCENUS INFELIX Harger.

*Syscenus infelix* HARGER, Report U. S. Commissioner of Fish and Fisheries for 1878, pt. 6, 1880, pp. 387-390; Bull. Mus. Comp. Zool. Harvard College, vol. 11, 1883, No. 4, pp. 100-102, pl. 3, figs. 5-5a; pl. 4, figs. 3-3h.—RICHARDSON, Proc. Amer. Philos. Soc., vol. 37, 1898, p. 8 (footnote); Amer. Naturalist, vol. 34, 1900, p. 219; Proc. U. S. Nat. Mus., vol. 23, 1901, p. 524.—NORMAN, Ann. Mag. Nat. Hist. (7), vol. 14, 1904, p. 437.—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 212-214.

*Harponyx pranzoides* SARS, Forhandlungen i Videnskab Selsk. Christiania, No. 18, 1883, p. 60 (young).

*Rocinela lilljeborgii* BOVALLIUS, Bihang. till Vetensk. Akad. Handl., vol. 10, No. 10, 1885, pp. 3-10, pls. 1-11.

*Syscenus lilljeborgii* BOVALLIUS, Bihang. till K. Sv. Vet. Akad. Handl., vol. 11, No. 17, 1886-87, pp. 17-18.

*Locality*.—Station 5066, at Ose Saki, S. 52° E., 7.3 miles (lat. 35° 06' 05'' N.; long. 138° 40' 20'' E.).

*Depth*.—Two hundred and eleven to two hundred and ninety-three fathoms, in fine black sand.

*Remarks*.—Only one imperfect specimen was collected.

## SYSCENUS LATUS, new species.

Body 41 mm. long and 20 mm. wide at its greatest width. Thorax broad, ovate; abdomen abruptly narrower than thorax, only 8 mm. wide at the base, and becoming gradually a little narrower from the anterior to the posterior extremity. Surface of body smooth. Color, in alcohol, yellow.

Head nearly twice as wide as long, 4 mm. : 7 mm. Front of head triangularly produced in the middle. Eyes entirely wanting, but ocular swellings are present, showing the position of the eyes. Ocular swellings large and occupying the entire lateral margin. The first pair of antennæ have the first two articles about equal in length; the third is twice as long as the second; the flagellum is composed of thirteen articles and extends three articles beyond the peduncle of the second antennæ. The second pair of antennæ have the first two articles short and subequal; the third is a little longer than either the first or second; the fourth and fifth are long and subequal. each being about as

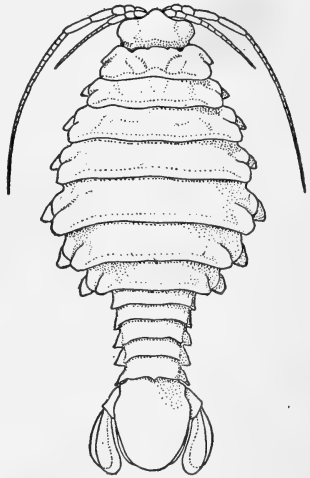


FIG. 11.—SYSCENUS LATUS. × 1.3. (Drawn by Miss V. Dandridge.)

long as the first three taken together; the flagellum is composed of twenty-eight or twenty-nine articles. The second antennæ, when retracted, extend to the middle of the sixth thoracic segment. The frontal lamina is large, triangular in front, wedge-shaped, with the post-lateral angles produced and widely separating the basal articles of the second pair of antennæ. First, fifth, and sixth segments longest, and subequal, each being 4 mm. in length. Second, third, and seventh segments 3 mm. each in length; fourth segment  $3\frac{1}{2}$  mm. long. The segments increase gradually in width to the fifth, which is the widest; the sixth and seventh decrease in width gradually, the seventh being  $12\frac{1}{2}$  mm. wide. Epimera are distinctly separated on all the segments with the exception of the first; they are broad plates, with the posterior extremities rounded.

The abdomen is abruptly narrower than the thorax, the basal segment being only 8 mm. wide. All six segments are distinct; the first is  $1\frac{1}{2}$  mm. long; the four following segments are 2 mm. in length. The post-lateral angles are acute and in the fifth segment are somewhat produced. The fifth segment also has the posterior margin produced backward in a sharp, median point, about 1 mm. long. The sixth or terminal segment is  $7\frac{1}{2}$  mm. wide and 10 mm. long; it is widely rounded posteriorly. The uropoda are about as long as the terminal segment; the inner branch is a little longer and a little wider than the outer branch; they are similar in shape and widely rounded posteriorly.

The first three pairs of legs are prehensile, the last four pairs ambulatory. The last four pairs gradually increase in length, the two last pairs being extremely long. The legs are all free from spines.

One large specimen, a female, comes from station 4907, 10–20 miles southwest of Koshika Islands, Eastern Sea, at Tsurikake Saki Light, S.  $83^{\circ}$  E., 14.7 miles (lat.  $31^{\circ} 39' 30''$  N.; long.  $129^{\circ} 24'$  E.). Another small specimen, a young female, comes from station 4906, Tsurikake Saki Light, S.  $85^{\circ}$  E., 17.2 miles (lat.  $31^{\circ} 39'$  N.; long.  $129^{\circ} 20' 30''$  E.). They were taken at a depth of 406 fathoms in gray globigerina ooze.

This species differs from *Syscenus infelix* Harger in the much broader and more ovate thorax, in the narrower abdomen, the longer antennæ and antennulæ, in the differently shaped head, terminal segment, and uropods, the broader frontal lamina, and the longer legs. The fifth abdominal segment also has a median point on the posterior margin produced backward, not found in *S. infelix*.

*Type-specimen*.—Cat. No. 39502, U.S.N.M.



## Family CYMOTHOIDÆ.

## Genus MEINERTIA Stebbing.

## MEINERTIA TRIGONOCEPHALA (Leach).

*Cymothoa trigonocephala* LEACH, Dict. Sci. Nat., vol. 12, 1818, p. 353.—MILNE EDWARDS, Hist. Nat. Crust., vol. 3, p. 272.—DE HAAN, Faun. Japon., vol. 50, 1850, p. 227, fig. 7a-b.

*Ceratothoa trigonocephala* SCHIEDTE and MEINERT, Naturhist. Tidsskrift, (3), vol. 13, 1883, pp. 358-364, pl. 16, figs. 1-7.

*Meinertia trigonocephala* STEBBING, Hist. Crust., 1893, p. 354.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 27, 1904, p. 46.

*Locality*.—Tanegashima, Japan.

## Genus LIVONECA Leach.

## LIVONECA PROPINQUA Richardson.

*Livoneca propinqua* RICHARDSON, Proc. U. S. Nat. Mus., vol. 27, 1904, pp. 37-38.

*Localities*.—Station 5060, at Ose Saki, S. 53° E., 7.3 miles (lat. 35° 06' N.; long. 138° 40' 10'' E.); station 4967, going from Kobe, Japan, to Yokohama, Japan, at Shio Misaki Light, N. 83° E., 6.5 miles (lat. 33° 25' 10'' N.; long. 135° 37' 20'' E.).

*Depth*.—One hundred and ninety-seven fathoms in coarse black sand; 244 fathoms in brown mud, sand, and foraminifera.

*Host*.—Mouth cavity of chalinura.

## LIVONECA SACCIGER, new species.

Body of adult female, ovate, 20 mm. wide and 34 mm. long. Surface smooth. Color, in alcohol, pale yellow.

Head almost as long as wide, 4 mm.: 5½ mm. Anterior margin rounded and produced in a small median point. Posterior margin rounded. Eyes almost entirely absent, with only a slight trace of them. First pair of antennæ, composed of eight articles, extend to the antero-lateral angle of the first thoracic segment. Second pair of antennæ, composed of twelve articles, extend to the middle of the first thoracic segment.

The first thoracic segment is 3 mm. long, the second 2¾ mm., the third 3½ mm., the fourth and fifth each 3¾ mm., the sixth 3½ mm., the seventh 2 mm.

The first segment has the antero-lateral angles acutely produced. Epimera are present on all the segments, with the exception of the first, in the form of elongated plates, extending the entire length of

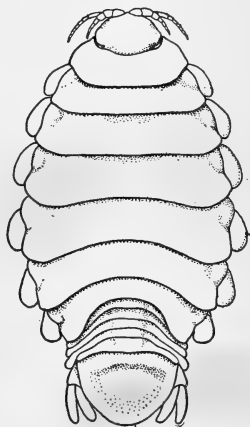


FIG. 12.—LIVONECA SACCIGER.  $\times 1.5$ . (Drawn by Miss V. Dandridge.)

the segment, gradually becoming wider from the first to the last, and all with the posterior extremity rounded, sac-like.

The abdomen is immersed in the seventh thoracic segment. The first four segments are about equal in length, each being about 1 mm. long; the fifth segment is a little longer, being  $1\frac{1}{2}$  mm. in length. The sixth or terminal segment is a little wider than long, 7 mm. :  $8\frac{1}{2}$  mm. It is posteriorly rounded. The uropods are equal in length, the inner one being a little wider and both rounded posteriorly. They do not reach the extremity of the terminal segment. The outer branch is 1 mm. wide and a little over 3 mm. long.

All the legs are prehensile; the basis of the last four pairs is furnished with a very low carina.

Only one adult female comes from station 4957, having been collected on the way from Kagoshima, Kagoshima Gulf, Japan, to Kobe, Japan, by way of Bungo Channel and Inland Sea at Mizimoko Shima Light N.  $22^{\circ}$  W., 29 miles (lat.  $32^{\circ} 36'$  N.; long.  $132^{\circ} 23'$  E.), at a depth of 437 fathoms, in greenish-brown mud, fine gray sand, and foraminifera.

Three young females and two males were collected at station 5044, on the south coast of Hokkaido, at lat.  $42^{\circ} 10' 40''$  N., long.  $142^{\circ} 14'$  E. (approximate position), at a depth of 309 fathoms. They are from the mouth cavity of *Synaphobranchus*.

The males differ from the females in the presence of eyes, the longer antennæ of the first and second pairs, the first extending to the middle of the first thoracic segment, the second to the posterior margin of the first thoracic segment, and in the narrower and smaller body. The second antennæ in the young female are also a little longer than in the adult.

*Type-specimen*.—Cat. No. 39503, U.S.N.M.

LIVONECA EPIMERIAS, new species.

Body of adult female, elongate-ovate, almost twice as long as wide (15 mm. : 29 mm.). Surface smooth. Color, in alcohol, dark yellow.

Head almost as long as wide (3 mm. : 4 mm.). Anterior margin widely rounded. Eyes small, distinct, and placed in the lateral angles. Posterior margin of head also rounded. First pair of antennæ, composed of eight articles, extend to the antero-lateral angles of the first thoracic segment. Second pair of antennæ, composed of seven articles on one side and eight on the other, extend one-third of the lateral margin of the first thoracic segment.

The first segment of the thorax is  $3\frac{1}{2}$  mm. long, the second  $2\frac{1}{2}$  mm. long, the third  $2\frac{3}{4}$  mm., the fourth 3 mm., the fifth and sixth each  $2\frac{3}{4}$  mm., the seventh 2 mm. All the segments are furnished with distinct epimera with the exception of the first. They are in the form of narrow plates, except the last, which are very broad. All, except

those of the fourth and fifth segments, extend to the posterior margin of the segment. The posterior extremities are rounded.

The abdomen is deeply immersed in the seventh thoracic segment. The first four segments are about equal in length, each being 1 mm. long. The fifth segment is  $1\frac{1}{2}$  mm. long. The sixth, or terminal, segment is wider than long, being 10 mm.:  $6\frac{1}{2}$  mm. It is posteriorly rounded. The outer branch of the uropoda is a little wider and a little longer than the inner branch. The outer is oval in shape, the inner more tapering. They are shorter than the abdomen, and do not reach its extremity. The outer branch is 1 mm. wide and  $2\frac{1}{2}$  mm. long.

All the legs are prehensile; the last four are furnished with a rather high carina.

Two specimens, both females, were collected at Hakodate, Japan. The second specimen has twelve articles to the second pair of antennæ, but is otherwise similar to the first.

The species is very close to *Livoneca propinqua* Richardson,<sup>a</sup> but differs in its larger size, in the shape of the head, the larger seventh epimera, the longer abdomen, and the differently shaped carina on the last four pairs of legs.

It is also similar to *Livoneca raynaudii* Milne Edwards,<sup>b</sup> but differs in the shape of the head and the epimera.

This species differs from *Livoneca caudata* Schiødte and Mienert<sup>c</sup> in the more rounded head, in the larger and more conspicuous epimera of the seventh segment, in the narrower abdomen as compared with the width of the thorax, in having the outer branch of the uropoda slightly longer instead of shorter than the inner branch, and in having a rather high carina on the basis of the last four pairs of legs.

*Type-specimen*.—Cat. No. 39504, U.S.N.M.

### Family SPHÆROMIDÆ.

#### Genus TECTICEPS Richardson.

##### TECTICEPS RENOCULIS, new species.

Body oblong-ovate, very broad,  $20\frac{1}{2}$  mm. in length and 13 mm. in width. Surface minutely granulate. Color pink, with the lateral margins becoming white.

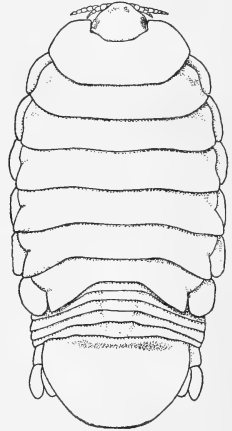


FIG. 13.—*LIVONECA*  
*EPIMERIAS*.  $\times 1.86$ .  
(Drawn by Miss V.  
Dandridge.)

<sup>a</sup> Proc. U. S. Nat. Museum, vol. 27, 1904, pp. 37–38.

<sup>b</sup> Hist. Nat. Crust., vol. 3, p. 262.—Schiødte and Meinert, (3), vol. 14, 1883–84, pp. 367–372, pl. 15, figs. 9–10.

<sup>c</sup> Naturhistorisk Tidsskrift, (3), vol. 14, 1883–84, pp. 360–362, pl. 15, figs. 1–2.

Head wider than long, 7 mm.: 4 mm., wider anteriorly than posteriorly, with the eyes, which are large, composite and kidney shaped, situated in the posterior half, at the post-lateral angles. Front of head roundly produced. In a dorsal view both pairs of antennæ are entirely concealed. The first pair have the basal article large and dilated; the second article is about half as large as the first; the third is slender and elongate; the flagellum is composed of about 11 articles and extends to the posterior margin of the first thoracic segment. The second antennæ, with a flagellum of 11 articles, extend to the posterior margin of the third thoracic segment.

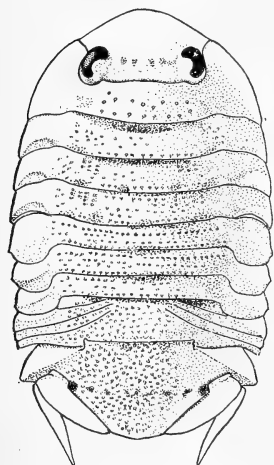


FIG. 14.—TECTICEPS RENOCULIS.  $\times 2.6$ . (Drawn by Miss V. Dandridge.)

The first segment of the thorax has the antero-lateral angles produced so as to surround the posterior half of the head. All the segments are about equal in length. The epimera are not distinctly separated from the segments; they are produced posteriorly in a quadrilateral process, with rounded angles.

The abdomen consists of two segments, the first of which has three suture lines, indicating partly coalesced segments. The second, or terminal, segment is about twice as broad as long,  $5\frac{1}{2}$  mm.: 11 mm. The posterior extremity is roundly truncate. A carina crosses the basal portion of the segment on either side. The inner branch of the uropoda is fixed, immovable, and does not extend beyond the posterior margin of the terminal abdominal segment. The outer, movable branch is much narrower than the inner branch, is a little longer, and is produced to a pointed extremity. In the female the outer branch is equal in length to the inner branch.

The first two pairs of legs in the male are subchelate. In the first pair the propodus is large and oval in shape, and is armed on the inferior margin with stiff bristles and hairs. In the second pair of legs the propodus is long and narrow, and has a rudimentary pollex at the base. The following five pairs of legs are ambulatory and increase gradually in length. In the female only the first pair of legs are subchelate and are similar to those of the male.

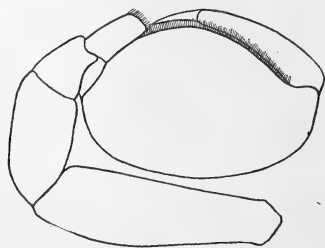


FIG. 15.—TECTICEPS RENOCULIS. FIRST LEG OF MALE.  $\times 14\frac{1}{2}$ .

Twenty-three specimens, both males and females, were collected by the U. S. Bureau of Fisheries steamer *Albatross* at stations 5023 and 5024, off eastern coast, Saghalin Island, vicinity of Cape Patience, in Okhotsk Sea, at Flat Hill, N.  $53^{\circ}$  W., Cape Patience, S.  $77^{\circ}$  W. (lat.  $48^{\circ} 43' 30''$  N.; long.  $145^{\circ} 3'$  E.), and N.  $48^{\circ}$  W.; Cape Patience, S.  $74^{\circ}$  W. (lat.  $48^{\circ} 43' 10''$  N.; long.  $144^{\circ} 53' 30''$  E.).

This species differs from *T. alascensis* Richardson<sup>a</sup> in the shape of the terminal segment of the abdomen, which is truncate and not acutely triangular, in the shorter outer branch of the uropoda, in the broader body, and in the tuberculate character of the surface of the body. It differs from *T. convexus* Richardson<sup>b</sup> in the position of the eyes, which are placed in the posterior half of the head, and not in the middle as in *T. convexus*, in the shorter antennæ, in the differently shaped abdomen, the broader body and the tuberculate character of the surface of the body. It differs from both species in the shape of the eyes, which are semi-lunate or kidney-shaped.

*Type-specimen*.—Cat. No. 39505, U.S.N.M.

Genus SPHÆROMA Latreille.

SPHÆROMA SIEBOLDI Dollfus.

*Sphæroma sieboldi* DOLLFUS, Notes from the Leyden Museum, vol. 11, pp. 93-94, pl. 5, fig. 3a-3b.

*Locality*.—Hakodate, Japan.

*Depth*.—Surface.

The type species came from Japan.

The specimen, collected by the Bureau of Fisheries steamer *Albatross*, differs from the type as described by Dollfus in the longer first pair of antennæ, which have a flagellum of eleven articles instead of eight, and the longer second pair of antennæ, which have a flagellum of fifteen articles instead of ten. The tubercles on the abdomen form two longitudinal parallel rows, one on either side of the median line, not divergent rows. The other tubercles on the abdomen do not appear to be arranged in rows. The tubercles on the anterior part of the body are very small, hardly perceptible, and not numerous.

Hansen<sup>c</sup> does not mention this species in his list of those belonging to the genus *Sphæroma*, but it belongs without question to this genus.

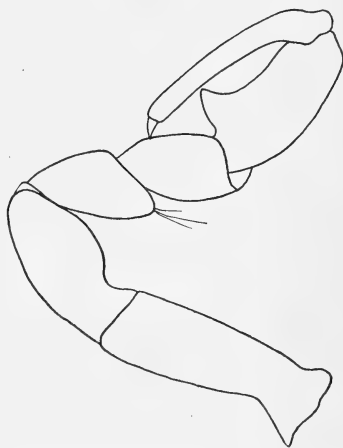


FIG. 16.—TECTICEPS RENOCULIS.  
SECOND LEG OF MALE.  $\times 14\frac{1}{2}$ .

<sup>a</sup> Bull. U. S. Nat. Museum, No. 54, 1905, pp. 276-278.

<sup>b</sup> Idem, pp. 278-280.

<sup>c</sup> Quart. Journ. Microscopical Science, vol. 49, 1906, pp. 115-117.

## Genus EXOSPHEROMA Stebbing.

## EXOSPHEROMA OREGONENSIS (Dana).

*Exosphæroma oregonensis* DANA, Proc. Acad. Nat. Sci. Phila., vol. 7, 1854-55, p. 177; U. S. Expl. Exp. Crust., vol. 14, 1853, p. 778, pl. 52, fig. 4.—STIMPSON, Bost. Journ. Nat. Hist., vol. 6, 1857, p. 509.—RICHARDSON, Bull. U. S. Nat. Museum No. 54, 1905, pp. 296-298.

*Sphæroma olivacea* LOCKINGTON, Proc. Cal. Acad. Sci., vol. 7, 1877, pt. 1, p. 45.

*Sphæroma oregonensis* RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 836; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 180; American Naturalist, vol. 34, 1900, p. 223; Harriman Alaska Exp. Crust., vol. 10, 1904, p. 214; Proc. U. S. Nat. Mus., vol. 27, 1904, p. 659.

*Localities*.—Nazan Bay, Atka; Unalaska; Attu.

*Depth*.—Shore.

## Genus CYMODOCE Leach.

## CYMODOCE JAPONICA Richardson.

*Cymodoce japonica* RICHARDSON, Proc. U. S. Nat. Mus., vol. 31, 1906, pp. 7-8 (male).

*Cymodoce affinis* RICHARDSON, Proc. U. S. Nat. Mus., vol. 31, 1906, pp. 11-12 (female).

*Localities*.—Hakodate Bay, Japan; Otaru, Hokkaido; Nanao; Mororan, Japan; station 4879, at Oki Shimi, S. 70° W., 7.5 miles (lat. 34° 17' N.; long. 130° 15' E.) and station 4877, S. 37° W., 6.3 miles (lat. 34° 20' 30'' N.; long. 130° 11' E.); station 4849, on the way from Saigo, Dogo Island, Oki Group, to Matsu Shima, Sea of Japan (off coast of Korea) at lat. 36° 46' N.; long. 132° 15' E.

*Depth*.—Collected around surface light; shore; 59 fathoms in fine gray sand, broken shells; 846 fathoms, in green mud and globigerina.

*Remarks*.—*Cymodoce affinis* is probably the female of *Cymodoce japonica*, and I therefore unite these two species. A large number of specimens of both sexes were collected in the same locality, which has convinced me that the two species heretofore recognized are the same.

*Cymodoce acuta* Richardson<sup>a</sup> is the female of an unknown male, which is probably quite similar to *Cymodoce japonica*. The female of *Cymodoce acuta* is very much like the female of *Cymodoce japonica*.

One specimen, a male, which I have doubtfully referred to this species, was collected at station 4876 in eastern channel of Korea Strait, vicinity of Oki Shima, at S. 29° W., 5.3 miles (lat. 34° 20' N.; long. 130° 10' E.), at a depth of 59 fathoms, in fine gray sand and broken shells. It differs from the type in having longer uropoda and in having the body covered with thick hairs. It is a small specimen and probably younger than the others in the collection.

<sup>a</sup> Proc. U. S. Nat. Mus., vol. 27, 1904, pp. 38-39.

## HOLOTELSON, new genus.

Head of normal size. Basal article of first pair of antennæ with the distal posterior angle not produced in an acute process.

Seventh thoracic segment in male produced backward in two small processes, one on either side of the median line. These processes are much smaller in the female, but are indicated.

First segment of abdomen produced in the median line on the posterior margin in a small tubercle, represented in both sexes.

Terminal segment of abdomen, with the posterior margin produced backward in one long median process, at the base of which on either side is a small rounded process. The median process is shorter in the female, and the lateral processes are also reduced.

The branches of the uropoda are similar in size in the male, the exopod of the female being somewhat smaller than the endopod.

The second pleopod of the male is furnished with a stylet.

The exopod of the third pleopod is jointed near the extremity.

Both branches of the fourth and fifth pairs of pleopods are fleshy, with transverse folds, and are without marginal setæ. The exopod of the fifth pleopod is jointed.

This genus belongs in the section *eubranchiata* of Hansen, but differs from the other genera in that section in not having the terminal segment of the abdomen emarginate.

The type of the genus is *Holotelson tuberculatus*, the description of which follows:

## HOLOTELSON TUBERCULATUS, new species.

Body oblong-ovate, about twice as long as wide,  $5\frac{1}{2}$  mm.: 11 mm.

Head wider than long, rounded in front, and with a small median point. Eyes round, composite, and placed at the post-lateral angles. The first pair of antennæ have the basal article large and dilated, about twice as long as wide; the second article is short, about as wide as long, and nearly as wide as the basal article; the third article is narrow and elongate, being only half as wide as the second article and twice as long; the flagellum is composed of fourteen articles and extends to the middle of the first thoracic segment. The second antennæ have a flagellum of fifteen articles and extend to the middle of the second thoracic segment.

The first segment of the thorax is about one and a half times longer than any of the following five segments which are of nearly equal length. The lateral parts of these segments are short and broad and produced at the post-lateral angles in rounded triangular processes.



FIG. 17.—HOLOTELSON TUBERCULATUS. FIRST ANTENNA OF FEMALE.  $\times 15\frac{1}{2}$ .

The seventh segment is a little longer in the middle portion than any of the five preceding segments and is produced backward in two short rounded processes, one on either side of the median line, which extend over the first abdominal segment, covering its anterior portion.

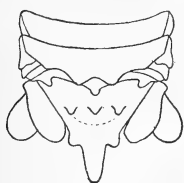


FIG. 18.—HOLOTELSON TUBERCULATUS. ABDOMEN OF MALE.  $\times 3\frac{1}{2}$ .

The first segment of the abdomen is longer in the middle portion than at the sides, and is produced in the median line in a triangular process which ends in a small tubercle. There are two suture lines on either side, indicating partly coalesced segments. The terminal segment has a transverse row of three tubercles about the middle of the segment, one in the median line and one on either side. Posteriorly it is produced in a long median process, about twice as long as wide and rounded at the extremity. At the base of this process on either side is a small, rounded tooth. The branches of the uropoda are about equal in size and similar in shape; they are oar-like and do not extend beyond the lateral teeth at the base of the median process.

The female differs from the male in the shorter terminal abdominal process, in the less pronounced teeth at the base of this process, in the shorter processes on the posterior margin of the seventh abdominal segment, which are only slightly indicated, and in not having the first abdominal segment triangularly produced in the middle and terminating in a tubercle.

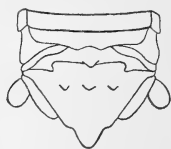


FIG. 19.—HOLOTELSON TUBERCULATUS. ABDOMEN OF FEMALE.  $\times 3\frac{1}{2}$ .

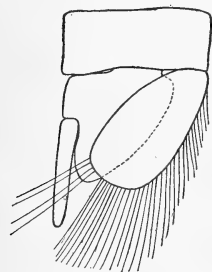


FIG. 20.—HOLOTELSON TUBERCULATUS. SECOND PLEPOD OF MALE.  $\times 15\frac{1}{2}$ .

Five specimens, two females and three males, were collected by the U. S. Bureau of Fisheries steamer *Albatross* at Mororan, Japan, on the shore.

The female of this species is similar to *Sphaeroma aspera* Haswell<sup>a</sup> from Port Jackson, Australia, but differs in having three tubercles in a transverse line about the middle of the terminal segment, in lacking the "prominent tubercle on the posterior margin on either side of the middle line" of the first segment of the abdomen, and in not having the last abdominal segment "ornamented with two slightly convergent irregular rows of minute tubercles."

*Type-specimen*.—Cat. No. 39506, U.S.N.M.

<sup>a</sup> Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 472, pl. 16, fig. 3. The species described by Haswell is probably a *Cymodoce*, the specimen obtained being the female.



## Family LIMNORIIDÆ.

## Genus LIMNORIA Leach.

## LIMNORIA JAPONICA, new species.

Body oblong-ovate, 2 mm. : 5 mm. Color of body, in alcohol, yellow, with the fifth, sixth and seventh segments of the thorax reddish brown.

Head three times wider than long ( $\frac{1}{2}$  mm. :  $1\frac{1}{2}$  mm.). Front with a rounded excavation. Eyes large, round, composite, and situated close to the lateral margin. The head is very bulbous, and from the anterior margin projects upward to form a large rounded prominence. The first pair of antennæ are composed of four articles; the first two are subequal; the third is a little longer than either of the preceding; the fourth is minute and terminates in a bunch of long hairs. The second antennæ have a peduncle of five articles, the first two of which are short, the last three longer and subequal; the flagellum is composed of about five articles, and is furnished with a few hairs.

The first segment of the thorax is twice as long as the head or any of the six following segments, which are subequal. Epimera are distinctly separated on all the segments with the exception of the first and are in the form of wide plates, gradually becoming wider from the first to the last.

The first four segments of the abdomen are subequal in length, and each is a little shorter than any of the preceding six thoracic segments. The fifth segment is twice as long as any of the four preceding segments and has two low median tubercles in longitudinal series. The sixth or terminal segment is large, almost circular in outline, and concave on the dorsal surface. It has a large prominent tubercle in the median line near the base, and two prominent tubercles, close together, one on either side of the median line, about one-third the distance between the anterior and the posterior margin. These tubercles are continued in two low parallel ridges. The uropoda are about as long as the abdomen; the inner branch is shorter than the peduncle; the outer is minute.

Thirty-one specimens of this species were collected at station 4828, on the way from Nanao, Hondo, Japan, to Isuruga, Hondo, Japan, at Sudzu Misaki Light, N.  $57^{\circ}$  W., 16 miles (lat.  $37^{\circ} 23'$  N.; long.  $137^{\circ} 36'$  E.) at a depth of 163 fathoms. They were taken "from crevices in water-logged fragment of bamboo." (H. Heath.)

This species differs from *Limnoria lignorum* Rathke in having the fifth abdominal segment armed with two low tubercles; in having the terminal abdominal segment armed with three tubercles and two

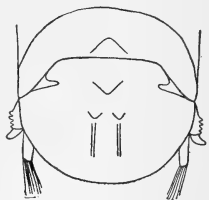


FIG. 21.—LIMNORIA JAPONICA. ABDOMEN.  $\times 15\frac{1}{2}$ .

parallel ridges, and in the lack of markings on the body, with the last three thoracic segments reddish brown in contrast to the yellow color of the rest of the body.

*Type-specimen*.—Cat. No. 39507, U.S.N.M.

## IDOTHEOIDEA or VALVIFERA.

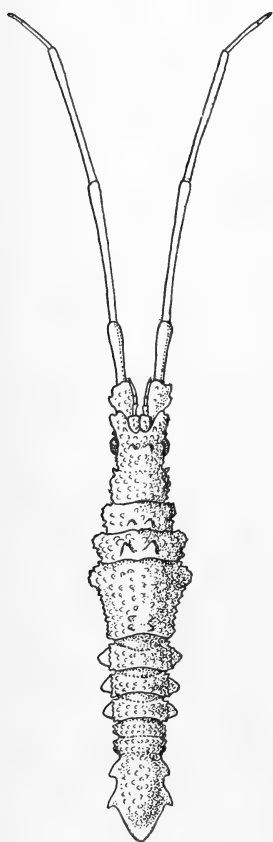
### Family ARCTURIDÆ.

#### Genus ASTACILLA Cordiner.

##### ASTACILLA DILATATA, new species.

Body narrow, elongate,  $2\frac{1}{2}$  mm. wide and  $9\frac{1}{2}$  mm. long. Surface of body thickly tuberculate.

Head with the front deeply excavate, the antero-lateral angles produced and bifid; the lateral margin is also produced in an



acute triangular process. The eyes are large, round, composite, and situated close to the lateral margin. About the middle of the head on the dorsal surface are two prominent tubercles, one on either side of the median line. The first pair of antennæ have the basal article large and dilated; the second and third are short and slender and subequal, each being only half the length of the basal article; the fourth article is about twice as long as the third. The first antennæ extend a little beyond the second article of the second pair of antennæ. The first two articles of the second antennæ are short, the first being shorter than the second; the third article is nearly twice as long as the first two taken together; the fourth and fifth are about equal in length and each is twice as long as the third; the flagellum consists of three articles, the first of which is nearly three times as long as the second, and the last is minute, less than half as long as the second. The second antennæ are as long as the body.

The head is coalesced with the first thoracic segment. The antero-lateral angles of the first segment are acutely produced. The first, second, and third segments are about equal in length; close to the posterior margin of the second and third segments are two tubercles, one on either side of the median line, those of the third segment being long and conspicuous. The fourth segment is twice as long as the third and is much broader anteriorly than posteriorly. The antero-lateral

FIG. 22.—*ASTACILLA DILATATA*. 53. (Drawn by Miss V. Dandridge.)

margins of the second, third, and fourth segments are produced on each side in a small lobe, beneath which the epimera are conspicuous each in the form of two small triangular processes. On the dorsal surface of the fourth segment, close to the posterior margin, are four small tubercles, two on either side of the median line, in longitudinal series. The last three segments gradually decrease a little in length, with the tubercles arranged, two on either side of the median line, in longitudinal series on each segment. The epimera project at the sides in the form of large triangular processes, one on each side of the segment.

The abdomen is composed of two short segments anterior to the large terminal segment, all of which appear to be coalesced. The first two segments have each two transverse rows of small tubercles on the dorsal surface. In both segments the lateral margins are produced on either side in a small triangular process. The terminal segment is produced to an acute triangular point and has two triangular processes on either side of the lateral margin, a pair at the base, and a pair about the middle of the segment. The first four pairs of legs are furnished with long hairs; the last three pairs are ambulatory.

The marsupium consists of two pairs of plates, as is also true of *A. cæca* and *A. granulata*, the anterior pair having been overlooked in previous examinations of these two species.

Only one specimen comes from station 4815, on the way from Hakodate, Japan, to Ebisu, Sado Island, Sea of Japan, at Niigata Light, S. 25° E., 21.5 miles (lat. 38° 16' N.; long. 138° 52' E.) at a depth of 70 fathoms in dark green sand.

*Type-specimen*.—Cat. No. 39508, U.S.N.M.

### Genus ARCTURUS Latreille.

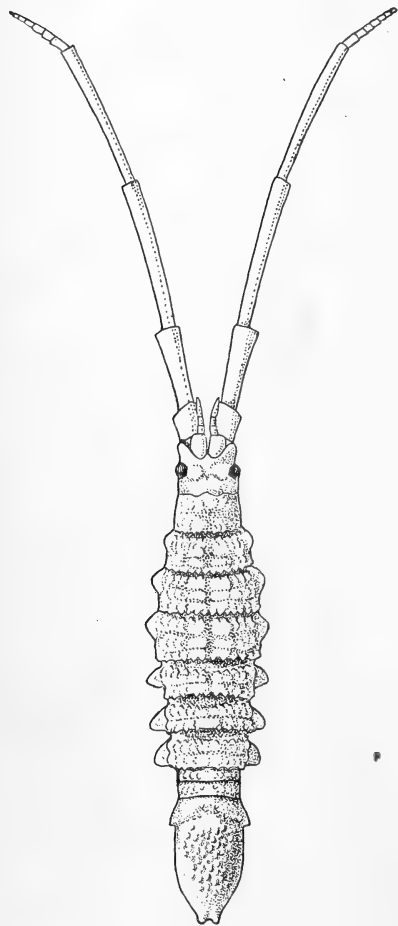
#### ARCTURUS HIRSUTUS Richardson.

*Arcturus hirsutus* RICHARDSON, Proc. U. S. Nat. Museum, vol. 27, 1904, pp. 41-43.

*Localities*.—Station 4769, on "Bowers Bank," Bering Sea, at lat. 54° 30' 40'' N.; 179° 14' E.; station 4770, at lat. 54° 31' N.; long. 179° 15' E.; station 4771, at lat. 54° 30' N.; long. 179° 17' E.; and station 4772, at lat. 54° 30' 30'' N.; long. 179° 14' E.; station 4780, on the way from "Petrel Bank," Bering Sea, to McDonald Bay, Agattu Island, Aleutians, by the passage east of Semisopchnoi and Amchitka Islands, at lat. 52° 01' N.; long. 174° 39' E.; station 4781, at lat. 52° 14' 30'' N.; long. 174° 13' E.; station 4784, on the way from Chichagof Harbor, Attu Island, around eastern end and south of Attu Island, to Preobrajleniya Bay, Medni Island, Komandorski Islands at East Cape, Attu Island, S. 18° W., 4 miles (lat. 52° 55' 40'' N.; long. 173° 26' E.); station 4786, on the way from Preobrajleniya Bay, Medni Island, to Nikolski Bay, Bering Island, by the passage

between islands, at North Point Copper Island, N.  $84^{\circ}$  E., 8.2 miles (lat.  $54^{\circ} 51' 30''$  N.; long.  $167^{\circ} 14'$  E.). A large specimen, mutilated, comes from station 5084, off Omai Saki Light (20 to 40 miles distant), N.  $29\frac{1}{2}^{\circ}$  E., 41 miles (lat.  $34^{\circ}$  N.; long.  $137^{\circ} 49' 40''$  E.), at a depth of 918 fathoms, which I have doubtfully referred to this species.

*Depth*.—344 fathoms; 244 fathoms; 482 fathoms; 135 fathoms; 247 fathoms; 426 fathoms; 1,046 fathoms; in gray sand and green mud; in broken shells; in green and brown sand; in gray mud, sand, and pebbles; in fine gray sand; in coarse pebbles.



ARCTURUS GRANULATUS, new species.

Body narrow, elongate, about four times as long as broad, 4 mm.:  $15\frac{1}{2}$  mm. Surface of body rugose, with the anterior and posterior margins of all the segments furnished with a row of tubercles. Abdomen covered with low tubercles.

Head a little wider than long,  $1\frac{1}{2}$  mm.: 2 mm. Front deeply excavate, with the antero-lateral angles produced. There is a small median point. The eyes are large, round, composite, and paced close to the lateral margin, about half-way between the anterior and the posterior margins. The rugosities on the posterior half of the head form two low elevations, one on either side of the median line. The first pair of antennæ have the basal article large and dilated; the next two articles are slender and subequal; the fourth article is about twice as long as the preceding

FIG. 23.—ARCTURUS GRANULATUS.  $\times 4\frac{1}{2}$ .  
(Drawn by Miss V. Dandridge.)

ing article and extends to the end of the second article of the second pair of antennæ. The second pair of antennæ have the first article very short; the second is longer and is about  $1\frac{1}{2}$  mm. long; the third is  $2\frac{1}{2}$  mm. in length; the fourth is twice as long as the third, being 5 mm. long; the fifth is almost as long as the fourth, being  $4\frac{1}{2}$  mm.; the flagellum is 2 mm. long and is composed of seven articles.

The first three segments of the thorax are subequal in length, being each about  $1\frac{1}{2}$  mm. long; the fourth segment is but little longer than these, being only  $1\frac{3}{4}$  mm. in length; the last three segments are subequal and each is 1 mm. long. The anterior part of the lateral margin of the second, third, and fourth segments is produced on either side in a small lobe; lateral to this lobe is the epimeron, which is in the form of a narrow plate, gradually increasing in size. On the last three segments the epimera are in the form of large, angular processes extending laterally on either side of the segment and occupying one-half the lateral margin in the fifth segment, two-thirds of the lateral margin in the sixth segment, and nearly all of the lateral margin in the seventh segment.

The abdomen is composed of three segments, two short ones anterior to the terminal segment. At the base of the terminal segment are two lateral projections, one on either side, which, together with the depression which extends across the segment, mark the place of coalescence of another segment. The terminal segment is produced to a bifid extremity; it is  $2\frac{1}{2}$  mm. wide and  $\frac{1}{2}$  mm. long.

There are four pairs of incubatory plates.<sup>a</sup>

The first four pairs of legs are directed forward and are furnished with long hairs; the last three pairs are ambulatory.

Five specimens, males and females (the female is described and figured) were collected at station 4803, on the way from Milne Bay, Simushir Island, Kuril Islands, to Hakodate, Hokkaido, Japan, by the Boussole Strait at Cape Rollin, Simushir Island, N.  $59^{\circ}$  W., 9 miles (lat.  $46^{\circ} 42'$  N.; long.  $151^{\circ} 45'$  E.), and at station 4804, at N.  $58^{\circ}$  W., 9.7 miles (lat.  $46^{\circ} 42'$  N.; long.  $151^{\circ} 47'$  E.), at a depth of 229 fathoms in coarse pebbles and black sand.

This species is close to *Arcturus beringanus* Benedict,<sup>b</sup> but differs in the rugose and tuberculate character of the body, in the shorter fourth thoracic segment and in the shorter abdomen, the apex of the terminal segment not being produced as in *A. beringanus*.

*Type-specimen*.—Cat. no. 39509, U.S.N.M.

ARCTURUS HASTIGER, new species.

Body narrow, elongate,  $8\frac{1}{2}$  mm.: 52 mm. Surface minutely granulate. Head deeply excavate in the middle, with a small median point. Antero-lateral angles acutely produced. Eyes very large, composite, about twice as wide as long, transversely oval. Two tubercles, one on either side of the median line, are situated about the middle of the head between the eyes. The first pair of antennæ

<sup>a</sup> In the genus *Arcturus* there are four pairs of incubatory plates and not three, as I have heretofore stated. The first pair are small and somewhat obscured by the overlapping second pair.

<sup>b</sup> Proc. Biol. Soc., Washington, vol. 12, 1898, pp. 46-47.

have the basal article large and dilated; the second and third articles are narrow, elongate, about equal in length, and shorter than the

basal article; the fourth article is one and a half times longer than the third, and is about as long as the basal article. Second antennæ with the first article short, not reaching beyond the first article of the first pair of antennæ; second article reaching to the end of the flagellum of the first pair of antennæ, being 4 mm. long; third article elongate, about three times longer than the second article, being 13 mm. long; fourth article more than one and a fourth times longer than the third, being 23 mm. long; fifth article about equal to the fourth in length, being 24 mm. long; the flagellum is composed of 10 articles, the first one of which is almost as long as all the others taken together.

All seven thoracic segments are furnished with two tubercles each, close to the posterior margin, one on either side of the median line. The fourth segment is about one and a fourth times longer than the third. The epimera are distinct on all the segments with the exception of the first; on the second, third, and fourth segments they are small and anteriorly placed; on the three last segments they are large and conspicuous and situated about the middle of the lateral margin.

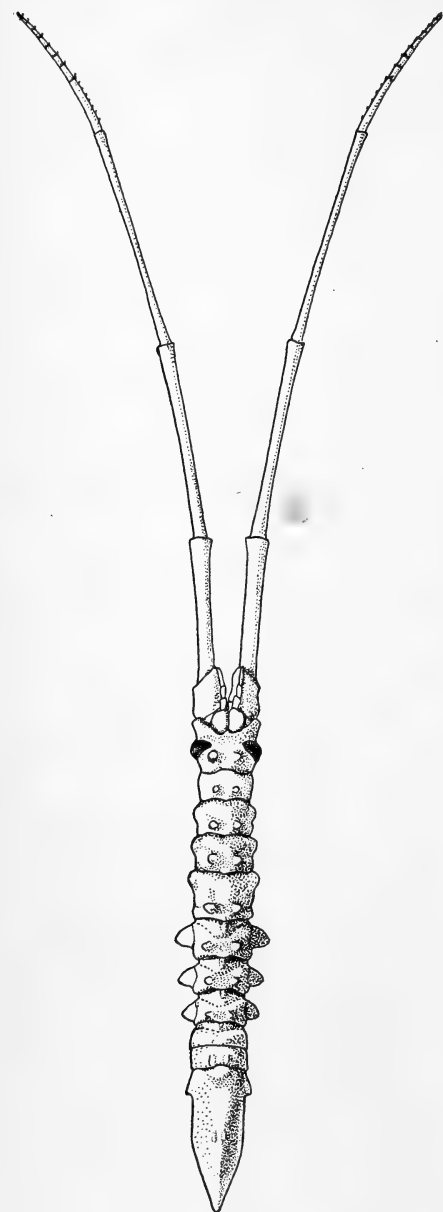


FIG. 24.—*ARCTURUS HASTIGER*.  $\times 1\frac{1}{2}$ .  
(Drawn by Miss V. Dandridge.)

The abdomen is composed of three segments, two short ones and the terminal segment, which ends in a pointed extremity, and has two

small tubercles on the middle of the dorsal surface, one on either side of the median line. At the base of the segment there is a prominent lateral tooth or projection on either side.

The first four pairs of legs are furnished with long hairs and are anteriorly directed; the last three pairs are ambulatory. There are four pairs of marsupial plates. (The female is described and figured.)

A large number of specimens come from station 4982, on the way from Hakodate, Hokkaido, Japan, to Otaru, Hokkaido, Japan, by the Tsugaru Strait, at Benkei Mizaki Light, S.  $3^{\circ}$  E., 10.5 miles (lat.  $43^{\circ}$  N.; long.  $140^{\circ} 10' 30''$  E.), and station 4983 (lat.  $43^{\circ} 01' 35''$  N.; long.  $140^{\circ} 10' 40''$  E.).

*Depth*.—Three hundred and ninety to four hundred and twenty-eight fathoms in green mud.

Young specimens differ from the adults in having the tubercles on the head replaced by spines, which are, however, not very long.

This species is very close to *Arcturus baffini* var. *tuberosus* Sars, but differs in the much larger eyes, in having two large and well developed tubercles on the head, and in having two distinct, though small, tubercles on each one of the segments of the thorax, and no tubercles on the first two segments of the abdomen. This species is also distinct from *Arcturus baffini* var. *intermedia* Norman.<sup>a</sup>

*Type-specimen*.—Cat. No. 39510, U.S.N.M.

#### ARCTURUS GLABER Benedict.

*Arcturus glabrus* BENEDICT, Proc. Biol. Soc. Wash., vol. 12, 1898, p. 46.

*Arcturus glaber* RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 855; Ann. Mag. Nat. Hist. (7), vol. 14, 1899, p. 277; American Naturalist, vol. 34, 1900, p. 230; Bull. U. S. Nat. Mus., No. 54, 1905, pp. 330–331.

*Localities*.—Station 4782 on the way from Agattu Island to Chichagof Harbor, Attu Island, by the Semichi Islands, Aleutians, at East Cape, Attu Island, S.  $22^{\circ}$  W., 4 miles (lat.  $52^{\circ} 55'$  N.; long.  $173^{\circ} 27'$  E.); station 3253, between Bristol Bay and Pribilof Islands, Alaska.

*Depth*.—Thirty-six to fifty-seven fathoms.

#### ARCTURUS TRITÆNIATUS, new species.

Body narrow, elongate, a little more than four times as long as wide ( $4\frac{1}{2}$  mm. : 19 mm.). Surface perfectly smooth. Color, in alcohol, yellow, with numerous brown spots close together, covering the entire surface of the body, with the exception of three longitudinal bands of yellow, one median, and a lateral band on either side, which extend the entire length of the body to about the middle of the terminal segment. The median longitudinal band stops at the base of the terminal segment.

<sup>a</sup> Ann. Mag. Nat. Hist. (7), vol. 14, 1904, p. 445.

Head wider than long (2 mm.: 3 mm.) and with the anterior margin deeply excavate between the produced antero-lateral angles; there is also a small median point separating the basal articles of the first pair of antennæ. The eyes are large, composite, wider than long, and placed close to the lateral margin half way between the anterior and the posterior margins. The first pair of antennæ have the basal article large and dilated; it extends to the end of the first article of the second antennæ; the second and third articles are narrow and subequal in length; the fourth article is equal in length to the second and third articles taken together and extends to the end of the second article of the peduncle of the second pair of antennæ. The second antennæ have the first article very short; the second is 2 mm. long; the third is twice as long as the second, being 4 mm. in length; the fourth is 7 mm. and the fifth is 5 mm.; the flagellum is 3 mm. long and is composed of five articles, the first of which is twice as long as the second.

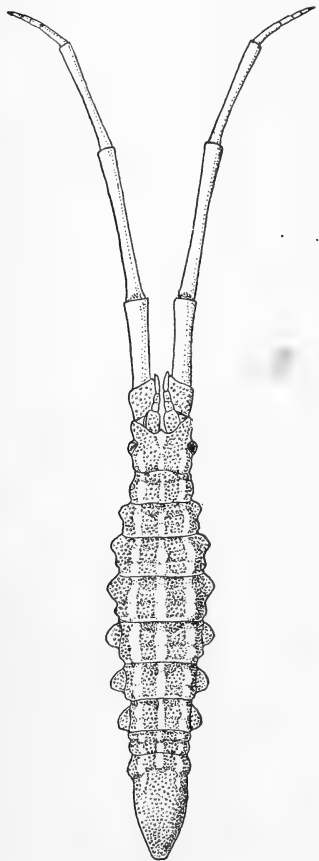


FIG. 25.—*ARCTURUS TRITENIATUS*.  $\times 3$ . (Drawn by Miss V. Dandridge.)

The segments of the thorax are about equal in length, with the exception of the fourth, which is one and a half times longer than any of the others. The anterior part of the lateral margin in the second, third, and fourth segments is produced in a lobe on either side; lateral to these lobes the epimera are placed and are in the form of narrow plates, gradually becoming wider; on the last three segments the epimera are large and conspicuous, projecting laterally and occupying half the margin of the fifth segment, two-thirds of the margin of the sixth segment, and nearly all of the margin of the seventh segment.

The abdomen is composed of three segments, two short ones anterior to the terminal segment, which is produced posteriorly to a narrow rounded extremity. At the base on either side the terminal segment is produced in a rounded lobe; the incision between the lobe and the rest of the segment marks a depression extending across the segment, which is the indication of another coalesced segment.

There are four pairs of marsupial plates.



The first four pairs of legs extend forward and are furnished with long hairs; the last three pairs are ambulatory.

Two specimens, a male and a female (the female is described and figured) were collected at station 4778, on the way from "Bowers Bank" to "Petrel Bank," Bering Sea, at Semisopochnoi Island, r. t. S.  $45^{\circ}$  W., l. t. S.  $12^{\circ}$  W., about 12 miles (lat.  $52^{\circ} 12'$  N.; long.  $179^{\circ} 52'$  E.), at a depth of 43 fathoms in fine black gravel.

This species is very close to *Arcturus glaber* Benedict<sup>a</sup> from Bering Sea, but differs in the shorter and more thickset body; in the shorter second antennæ; in the shorter abdomen, with the apex less pointed; in the shorter fourth segment of the thorax; and in having the three longitudinal bands of yellow on the body.

This species is also similar to *Arcturus myops* Beddard<sup>b</sup> from New Zealand.

*Type - specimen.*—Cat. No. 39511, U.S.N.M.

**ARCTURUS MAGNISPINIS**, new species.

This species is very close to *Arcturus longispinus* Benedict,<sup>c</sup> so that a complete description does not seem necessary. It differs from that form in having the tubercles of the first thoracic segment replaced by small spines; in having the third, fourth, and fifth articles of the peduncle of

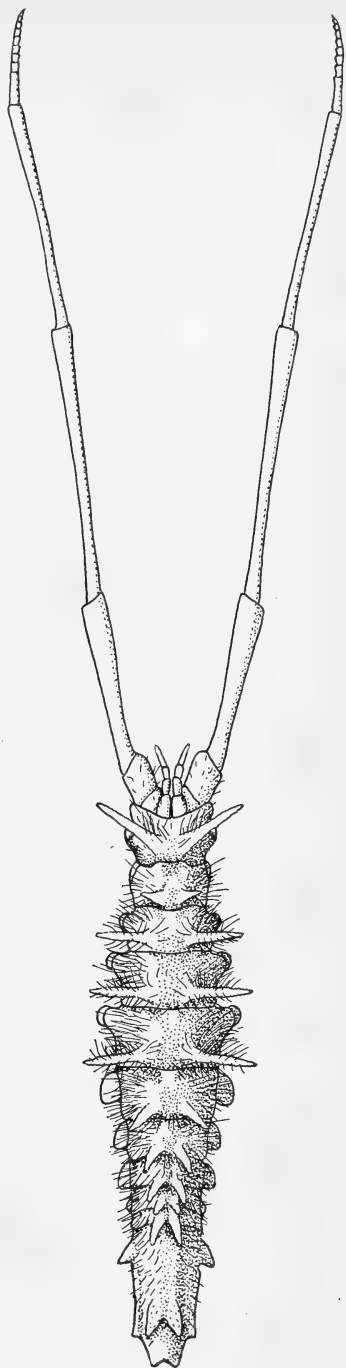


FIG. 26.—*ARCTURUS MAGNISPINIS*.  
× 24. FEMALE. (Drawn by  
Miss V. Dandridge.)

<sup>a</sup> Proc. Biol. Soc. Washington, vol. 12, 1898, p. 46.

<sup>b</sup> Challenger Report, vol. 17, 1886, p. 100, pl. 22, figs. 5-8.

<sup>c</sup> Proc. Biol. Soc. Washington, vol. 12, 1898, pp. 44-45; Richardson, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 329-330.

the second antennae shorter (the second article is 3 mm. long, the third is 9 mm., the fourth is 14 mm., the fifth is 13 mm.); in having the spines of the head and of the second, third, and fourth segments of the thorax stouter and longer; in having the body shorter and more thickset (8 mm.:30 mm.), and densely covered with hairs; and in having the abdomen below the median dorsal spines shorter. The first antennae do not extend beyond the second article of the second antennae.

The young are similar to the adults.

A number of specimens (about twelve) were collected at station 4777, on "Petrel Bank," Bering Sea, at Semisopochnoi Island, r. t. S. 44° W., l. t. S. 4° W., about 12 miles (lat. 52° 11' N.; long. 179° 49' E.), and station 4778, r. t. S. 45° W., l. t. S. 12° W., about 12 miles (lat. 52° 12' N.; long. 179° 52' E.), at a depth of 43-52 fathoms.

One small specimen from station 4779 agrees in every respect with the other specimens, except that the terminal segment, instead of terminating in two points, is rounded posteriorly. This is probably an abnormal condition.

*Type-specimen*.—Cat. No. 39327, U.S.N.M.

*ARCTURUS DIVERSISPINIS*, new species.

This species is also close to *Arcturus longispinus* Benedict, but differs in having the tubercles of the first thoracic segment replaced by well-developed spines, which are almost as long as those of the three following segments, and in having the spines of the seventh thoracic segment rudimentary. The first antennae extend the length of the last article beyond the second article of the second antennae; the last article of the first antennae is about twice as long as the preceding article. There is a small, blunt spine on the outer distal end of the second article of the second antennae, and one on either side of the



FIG. 27.—*ARCTURUS DIVERSISPINIS*.  $\times 1.2$ . FEMALE.  
(Drawn by Miss V. Dandridge.)

head at the antero-lateral angles. The surface of the body is smooth and covered with long hairs. More than fifteen specimens of this species were collected at station 4784, on the way from Chichagof Harbor, Attu Island, around eastern end and south of Attu Island to Preobrajleniya Bay, Medni Island, Komandorskii Islands at East Cape, Attu Island, S.  $18^{\circ}$  W., 4 miles (lat.  $52^{\circ} 55' 40''$  N.; long.  $173^{\circ} 26'$  E.), at a depth of 135 fathoms.

*Type-specimen*.—Cat. No. 39432, U.S.N.M.

**ARCTURUS BREVISPINIS**, new species.

This species differs from *Arcturus longispinus* Benedict in having all the spines quite short, those of the last three thoracic segments and the first two abdominal segments being almost rudimentary. The terminal abdominal segment in all these specimens is longer than in *A. longispinus*. The body is covered with small, pointed tubercles. The first antennæ extend the length of the last article beyond the second article of the second antennæ. The last article of the first antennæ is about three times longer than the third article.

About nine specimens were collected at station 4784, on the way from Chichagof Harbor, Attu Island, around eastern end and south of Attu Island to Preobrajleniya Bay, Medni Island, Komandorskii

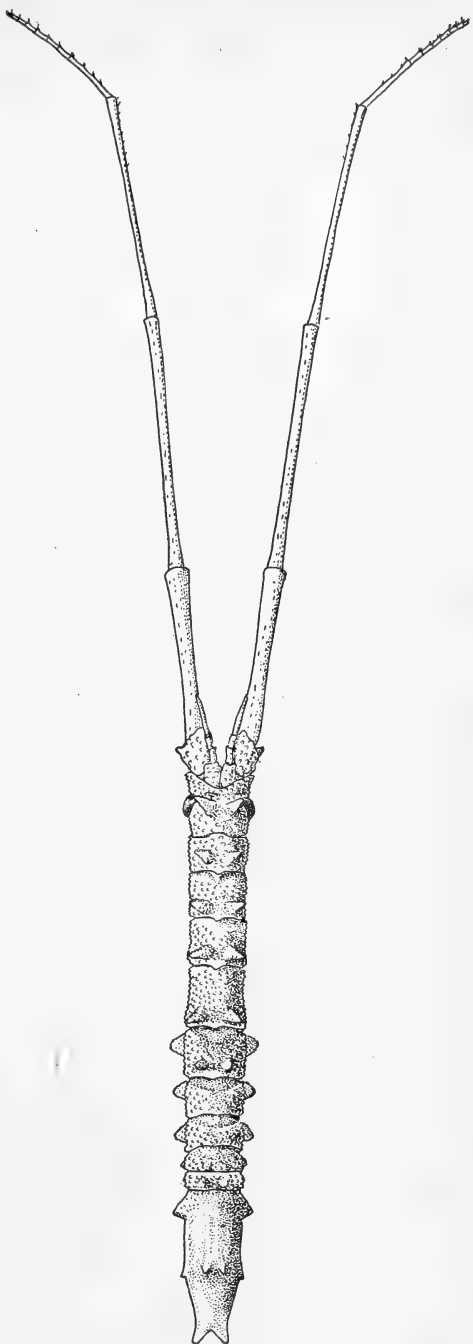


FIG. 28.—*ARCTURUS BREVISPINIS*.  $\times 2.2$ .  
MALE. (Drawn by Miss V. Dandridge.)

Islands, at East Cape, Attu Island, S.  $18^{\circ}$  W., 4 miles (lat.  $52^{\circ} 55' 40''$  N.; long.  $173^{\circ} 26'$  E.) at a depth of 135 fathoms.

*Type - specimen.*—Cat. No. 39313, U.S.N.M.

ARCTURUS CRASSISPINIS, new species.

This species is likewise close to *Arcturus longispinus* Benedict, but differs in having spines present on all the segments of the thorax and abdomen, only they are all of the same length and short, none being rudimentary. The terminal segment of the abdomen is also longer than in *A. longispinus*. This species is very large, measuring 44 mm. in length and  $8\frac{1}{2}$  mm. in width.

The spines on the body are short and stout. The surface of the body is covered with short hairs. The first pair of antennæ do not extend much beyond the second article of the second pair of antennæ. The second antennæ have the second article 4 mm. long; the third 13 mm.; the fourth 20 mm.; and the fifth, 17 mm. in length.

About 45 specimens come from the following localities: Station 5005, in Aniwa Bay, approaching Korsokov, Saghalin Island, at lat.  $46^{\circ} 4' 40''$  N.; long.  $142^{\circ} 27' 30''$  E.; station 5006, at lat.  $46^{\circ} 4'$  N.; long.  $142^{\circ} 29'$  E.; station 5007, at lat.  $46^{\circ} 3'$  N.; long.  $142^{\circ} 31'$  E.;



FIG. 29.—ARCTURUS CRASSISPINIS.  $\times 1.5$ . FEMALE.  
(Drawn by Miss V. Dandridge.)

station 5008, at lat.  $46^{\circ} 7' 50''$  N.; long.  $142^{\circ} 37' 20''$  E.; station 5009, at lat.  $46^{\circ} 21' 10''$  N.; long.  $142^{\circ} 40'$  E.; station 5010, at Korsokov Light, N.  $5^{\circ}$  E., 9.5 miles (lat.  $46^{\circ} 30' 30''$  N.; long.  $142^{\circ} 43' 30''$  E.); station 5020, off eastern coast, Saghalin Island, vicinity of Cape Patience, in Okhotsk Sea, at lat.  $48^{\circ} 32' 45''$  N.; long.  $145^{\circ} 7' 30''$  E.; station 5021, at lat.  $48^{\circ} 32' 30''$  N.; long.  $145^{\circ} 08' 45''$  E.; station 5022, at lat.  $48^{\circ} 35' 30''$  N.; long.  $145^{\circ} 20'$  E.; station 5024, Flat Hill, N.  $48^{\circ}$  W.; Cape Patience, S.  $74^{\circ}$  W. (lat.  $48^{\circ} 43' 10''$  N.; long.  $144^{\circ} 59' 30''$  E.); station 4854, on the way from Matsu Shima, Sea of Japan (off coast of Korea), to Nagasaki, Japan, at Cape Clonard, N.  $31^{\circ}$  W., 13.3 miles (lat.  $35^{\circ} 54'$  N.; long.  $129^{\circ} 46'$  E.); and station 4861, S.  $27^{\circ}$  W., 16.5 miles (lat.  $36^{\circ} 19'$  N.; long.  $129^{\circ} 47'$  E.).

*Depth*.—21–73 fathoms.

*Type-specimen*.—Cat. No. 39309, U.S.N.M.

### Family IDOTHEIDÆ.

#### Genus MESIDOTEA Richardson.

##### MESIDOTEA ENTOMON (Linnaeus).

*Oniscus entomon* LINNÆUS, Syst. Nat., 12th ed., vol. 1, pt. 2, 1767, p. 1060.

*Idotea entomon* Bosc, Hist. Nat. des Crust., vol. 2, 1802, p. 178.

*Idotæga entomon* LOCKINGTON, Proc. Cal. Acad. Sci., vol. 7, 1877, pt. 1, p. 45.

*Glyptonotus entomon* MIERS, Trans. Linn. Soc. London, vol. 16, 1883, pp. 12–13, pl. 1, figs. 1–2. (See Miers for further synonymy.)

*Mesidotea entomon* RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 348–350.

*Locality*.—Petropaulovsk.

#### Genus IDOTHEA Fabricius.

##### IDOTHEA OCHOTENSIS (Brandt).

*Idotea ochotensis* BRANDT, Middendorff's Sibirische Reise, vol. 2, 1851, Crust., p. 145, pl. 6, fig. 33.—MIERS, Jour. Linn. Soc. London, vol. 16, 1883, p. 32, pl. 1, figs. 8–10.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 846; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 265; American Naturalist, vol. 34, 1900, p. 227; Harriman Alaska Expedition, Crust., vol. 10, 1904, p. 219; Proc. U. S. Nat. Mus., vol. 27, 1904, p. 663; Bull. U. S. Bureau of Fisheries, 1905, p. 216.

*Idothea ochotensis* RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 366–367.

*Localities*.—Milne Bay, Simushir Islands; Nikolski, Bering Island; Petropaulovsk.

*Depth*.—Shore.

##### IDOTHEA METALLICA (Bosc).

*Idotea metallica* Bosc, Hist. Nat. Crust., vol. 2, 1802, p. 179, pl. 15, fig. 6.—MIERS, Jour. Linn. Soc. London, vol. 16, 1883, pp. 35–38 (see Miers for further synonymy).

*Idotea robusta* KRØYER, Naturh. Tidsskr., (2), 1846–49, p. 108.—STIMPSON, Proc. Acad. Nat. Sci. Phila., vol. 14, 1863, p. 133.—HARGER, Report U. S. Fish Com., pt. 6, 1880, p. 349, pl. 6, figs. 30–32.

*Idothea metallica* RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 362–363.

*Localities*.—Station 4883, on the way from Nagasaki, Japan, to Kagoshima, Kagoshima Gulf, Japan, at Nomo Zaki, N.  $83^{\circ}$  E., 10.25 miles (lat.  $32^{\circ} 33' 30''$  N.; long.  $129^{\circ} 32'$  E.); station 4849, on the way from Saigo, Dogo Island, Oki Group, to Matsu Shima, Sea of Japan (off coast of Korea) at lat.  $36^{\circ} 46'$  N.; long.  $132^{\circ} 15'$  E.; station 4850, at Liancourt Rocks, NW. (mag.), 13.8 miles (lat.  $36^{\circ} 56'$  N.; long.  $132^{\circ}$  E.); station 3766, Shioya Saki Light, N.  $78^{\circ}$ , W. 108 miles.

*Depth*.—Surface; 800–846 fathoms in green mud and globigerina. In dip net with Porpita.

Genus PENTIAS Richardson.

PENTIAS HAYI Richardson.

*Pentias hayi* RICHARDSON, Proc. U. S. Nat. Mus., vol. 27, 1904, pp. 47–49.

*Locality*.—Hakodate, Japan.

A single small specimen, a male, of this species was collected, which differs from the type in the narrower body and narrower epimera. The lateral margins of the segments are not incised as deeply for the reception of the epimera as in the type. Owing to the difference in size, the difference in sex and the insufficient material, I have referred the two specimens to the same species. The small specimen has the first segment of the thorax marked with ten parallel longitudinal lines of dark brown, close together. There is a small spot of dark brown on each one of the six following segments in the median line, close to the anterior margin, as well as one at the base of the abdomen. On the seventh thoracic segment is a large spot on either side on the lateral margin, and there is a large brown spot on either side of the abdomen close to the lateral margin about the middle of the segment.

Genus PENTIDOTEA Richardson.

PENTIDOTEA JAPONICA Richardson.

*Idotea japonica* RICHARDSON, Proc. U. S. Nat. Mus., vol. 22, 1900, pp. 131–134; Idem, vol. 27, 1904, p. 47.

*Localities*.—Mororan, Japan; Hakodate, Japan; Same, Rikuoku, Japan; Tomakomai, Japan.

*Depth*.—Shore.

Inasmuch as the palp of the maxillipeds is composed of five articles, this species must be referred to the genus *Pentidotea*.

## PENTIDOTEA WOSNESENSKII (Brandt).

*Idotea wosnesenskii* BRANDT, in Middendorff's Sibirische Reise, vol. 2, 1851, Crust., p. 146.—STIMPSON, Bost. Jour. Nat. Hist., vol. 6, 1857, p. 504.—SPENCE BATE, Lord's Naturalist in British Columbia, vol. 2, 1866, p. 281.—MIERS, Journ. Linn. Soc. London, vol. 16, 1883, p. 40.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 846; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 265; American Naturalist, vol. 34, 1900, p. 227; Harriman Alaska Expedition, Crust., vol. 10, 1904, p. 218; Proc. U. S. Nat. Mus., vol. 27, 1904, p. 663; Bull. U. S. Bureau of Fisheries, 1905, p. 216.

*Idotea hirtipes* DANA, U. S. Expl. Exp., Crust., vol. 14, 1853, p. 704, pl. 46, fig. 6.

*Idotea oregonensis* DANA, Proc. Acad. Nat. Sci. Phila., vol. 7, 1854, p. 175.

*Idotea media* (DANA?) SPENCE BATE, Lord's Naturalist in British Columbia, vol. 2, 1866, p. 282.

*Pentidotea wosnesenskii* RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 370-373.

*Localities*.—Agattu Island; Union Bay, Bayne Sound, British Columbia; Unalaska; Attu Islands; Nazan Bay, Atka.

*Depth*.—Shore.

## PENTIDOTEA WHITEI (Stimpson).

*Idotea whitei* STIMPSON, Proc. Acad. Nat. Sci. Phila., 1864, p. 155.—MIERS, Journ. Linn. Soc. London, vol. 16, 1883, pp. 42-43.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, pp. 846-847; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 266; American Naturalist, vol. 34, 1900, p. 227.

*Pentidotea whitei* RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 373-374.

*Locality*.—Nazan Bay, Atka.

## PENTIDOTEA ROTUNDATA, new species.

Body narrow, elongate, about five and a half times longer than wide ( $6\frac{1}{2}$  mm.:  $35\frac{1}{2}$  mm.). Surface smooth, color light green, with markings and dots of a darker green.

Head a little wider than long (4 mm.: 5 mm.). Front excavate, and the antero-lateral angles rounded. Eyes small, round, situated on the lateral margins, close to the posterior margin, and scarcely visible in a dorsal view. The first pair of antennæ have the basal article large and dilated, quadrate; the three following articles are short and subequal. The first antennæ extend to the end of the second article of the peduncle of the second antennæ. The first article of the second antennæ is extremely short and is scarcely visible in a dorsal view; the second and third articles are about equal in length, being each  $1\frac{1}{2}$  mm. long; the fourth article is a little longer than the

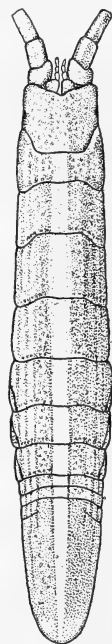


FIG. 30.—PENTIDOTEA ROTUNDATA.  $\times 2$ . (Drawn by Miss V. Dandridge.)

two preceding, being  $2\frac{1}{2}$  mm. long. The second antennæ are broken at the fourth article. The maxilliped has a palp of five articles.

The first segment of the thorax is not wider than the head, and has the antero-lateral angles produced, surrounding the posterior portion of the head. In the median line this segment is only 2 mm. long and is the shortest segment with the exception of the seventh, which is also but 2 mm. in length. The second segment is  $3\frac{1}{2}$  mm. long; the third and fourth 4 mm. each; the fifth 3 mm.; and the sixth  $2\frac{1}{2}$  mm. long. Epimera are distinct on all the segments with the exception of the first. They are in the form of extremely narrow, elongated plates, which in the second segment extend a little more

than half the length of the lateral margin, in the third and fourth segments about two-thirds of the lateral margin, and in the last three segments the entire length of the lateral margin. In a dorsal view the first three epimera are not visible.

The abdomen is composed of three segments, two short ones anterior to the long terminal segment. At the base of the terminal segment is a suture line on either side, indicating another partly coalesced segment. The terminal segment is  $9\frac{1}{2}$  mm. long and 5 mm. wide at the base; it tapers gradually to a rounded extremity.

The first four pairs of legs are directed forward, the last three pairs backward. All the legs are very small and short.

Only one specimen, a female, was collected at Same, Rikuoku, Japan.

*Type-specimen*.—Cat. No. 39516, U.S.N.M.

### Genus SYNIDOTEA Harger.

#### SYNIDOTEA BICUSPIDA (Owen).

*Idotea bicuspidata* OWEN, Crustacea of the Blossom, 1839, p. 92, pl. 27, fig. 6.

*Idotea pulchra* LOCKINGTON, Proc. Cal. Acad. Sci., vol. 7, 1877, p. 44.

*Edotea bicuspidata* MIERS, Journ. Linn. Soc. London, vol. 16, 1883, p. 66.

*Synidotea bicuspidata* SARS, Crust. Norwegian North Atlantic Exp., 1885, p. 116, pl. 10, figs. 24–26.—BENEDICT, Proc. Acad. Nat. Sci. Phila., 1897, pp. 391–392.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 848; Ann. Mag. Nat. Hist. (7), 1899, p. 268; American Naturalist, vol. 34, 1900, p. 228; Bull. U. S. Nat. Mus., No. 54, 1905, pp. 385–386.

*Localities*.—Station 3253, between Bristol Bay and Pribilof Islands; station 3255, N. and N. W. of Unimak Island.

*Depth*.—Thirty-six to forty-nine fathoms, in green mud, broken shells, and gray sand and gravel.

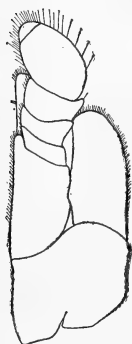


FIG. 31.—PENDIDOTEA  
ROTUNDATA. MAXIL-  
LIPED.  $\times 15\frac{1}{2}$ .



## SYNIDOTEA ACUTA, new species.

Body oblong-ovate, about twice as long as wide, 5 mm.:12 mm. Color yellow, with the exception of the third and fourth segments, which are red.

Head with the front produced in a wide border on either side of a median cleft. The frontal excavation is slight. The lateral portions of the frontal border form an angle with the dorsal portion. Just behind the median cleft is a prominent median tubercle. The eyes are small, round, composite, and placed close to the lateral margins. The first pair of antennæ extend to the middle of the fourth article of the peduncle of the second pair of antennæ; the first two articles are about equal in length; the third and fourth are about equal in length and each is a little longer than the second article. The second pair of antennæ have the first two articles about equal in length; the third and fourth are also equal in length and each is twice as long as either of the two preceding articles; the fifth article is about one and a half times longer than the fourth; the flagellum consists of ten articles. When retracted the second antennæ extend to the posterior margin of the first thoracic segment.

The lateral margins of the first and second thoracic segments are angulate; those of the following five segments are straight. All the epimera are coalesced with the segments. The first four segments are about equal in length; the last three gradually decrease a little in length.

The abdomen is composed of a single segment, with a suture line on either side at the base, indicating another partly coalesced segment. This segment is triangulate, with the apex very slightly excavate.

Only one specimen was collected by the U. S. Bureau of Fisheries Steamer *Albatross* at station 4778, on "Petrel Bank," Bering Sea, at Semisopochnoi Island, r. t. S. 45° W., l. t. S. 12° W., about 12 miles (lat. 52° 12' N.; long. 179° 52' E.) at a depth of 43 fathoms, in fine black gravel.

*Type-specimen*.—Cat. No. 39517, U.S.N.M.

This species is very close to *Synidotea bicuspidata* (Owen), but differs in having the first two segments of the thorax with lateral margins angulate, in having a prominent median tubercle on the head, and in the shape of the frontal border. The abdomen is also different, in being as long as wide, while in *S. bicuspidata* it is wider than long, and in having a more shallow excavation at the extremity. The second antennæ are also shorter, with fewer articles in the flagellum.

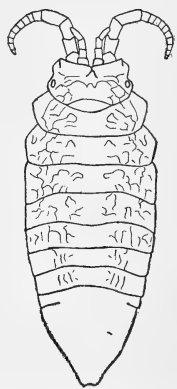


FIG. 32.—SYNIDOTEA ACUTA.  $\times 3\frac{1}{2}$ .

## SYNIDOTEA EPIMERATA, new species.

Body oblong-ovate, a little more than twice as long as wide (6 mm.; 13 mm.).

Head with the front excavate, the antero-lateral angles being very acutely produced. In the middle of the frontal excavation is another small excavation. The eyes are large, composite, and situated close to the lateral margin, about half way between the anterior and the posterior margins. In front of each eye, close to the anterior margin, is a prominent tubercle. Just posterior to the median excavation of the anterior margin is a single prominent median tubercle. A series of small tubercles in a transverse row lies just back of the median tubercle. The transverse ridge at the posterior extremity of the head has a single median tubercle. The first pair of antennæ have the first two articles about equal in length; the two following are also about equal in length and each is a little longer than either of the preceding articles. The first antennæ extend to the middle of the fourth article of the second pair of antennæ.

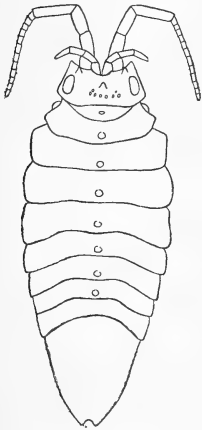


FIG. 33.—SYNIDOTEA EPIMERATA.  $\times 3\frac{1}{2}$ .

The first two articles of the second antennæ are short and subequal in length; the third and fourth articles are also subequal, and each is twice as long as either of the preceding articles; the fifth article is about one and a half times as long as the fourth; the flagellum consists of twelve articles. The second antennæ, when retracted, extend to the posterior margin of the third thoracic segment.

The first thoracic segment is shorter and narrower than the three following segments and has the lateral margins angulate. There are distinct epimera on the anterior part of this segment which are not present on any of the following segments. The epimera arise from the underside of the lateral margin and project anteriorly beyond the place where they are visible in a dorsal view. The lateral margins of the second segment are also angulate; those of the following segments are straight. The last three segments gradually decrease a little in length. The second, third, and fourth segments are about equal in length. On each one of the segments is a small median tubercle situated close to the posterior margin.

The abdomen is composed of a single segment with a suture line distinct at the sides, but less distinct in the middle, indicating another

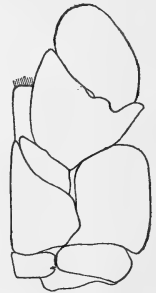


FIG. 34.—SYNIDOTEA EPIMERATA. MAXILLIPED.  $\times 23$ .

partly coalesced segment at the base. The abdomen tapers to the extremity, which has a deep rounded notch or excavation.

Only one specimen comes from station 4987, on the way from Hakodate, Hokkaido, Japan, to Otaru, Hokkaido, Japan, by way of Tsugaru Strait, at Kamoi Mizaki Light, N.  $76^{\circ}$  E., 3.2 miles (lat.  $43^{\circ} 19' 20''$  N.; long.  $140^{\circ} 17'$  E.), at a depth of 59 fathoms in a rocky bottom.

This species differs from all the other species of *Synidotea* in the presence of distinct epimera on the first thoracic segment.

*Type-specimen*.—Cat. No. 39518, U.S.N.M.

SYNIDOTEA TUBERCULATA, new species.

Body oblong-ovate, about twice as long as wide ( $8\frac{1}{2}$  mm.;  $16\frac{1}{2}$  mm.). Head with the front excavate in the middle, on either side of which the frontal border is wide and forms an angle with the lateral portion. This angle is elevated in the form of an arched tubercle. Just back of the median excavation are two large, prominent tubercles, one on either side of the median line. Posterior to these two tubercles is a transverse row of six low tubercles, three on either side of the median line. Posterior to these six tubercles is a ridge which is elevated to form three low tubercles, one median and one on either side of it. The eyes are large, round, composite, and situated close to the lateral margin on the posterior half of the head; they are somewhat elevated on rounded lobes. The first pair of antennæ have the first two articles subequal; the third and fourth are also about equal in length and each is a little longer than either of the first two. The first antennæ extend to the end of the fourth article of the peduncle of the second antennæ. The first two articles of the second pair of antennæ are short and subequal; the third is as long as the first two taken together; the fourth is a little longer than the third; the fifth is a little longer than the fourth; the flagellum consists of thirteen articles. When retracted, the second antennæ extend to the posterior margin of the second thoracic segment. All the epimera are firmly united with the segments.

The first four segments of the thorax are longer than the last three, which gradually decrease a little in length. The first segment has a prominent median tubercle, and a prominent arched, hornlike tubercle on either side of the median tubercle. The second, third, and fourth segments have each a median tubercle, and on either side of it a group of five or six tubercles, two of the group being larger and more con-

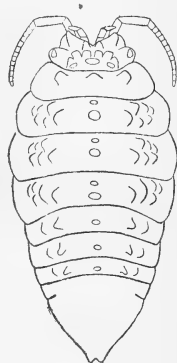


FIG. 35.—SYNIDOTEA TUBERCULATA.  $\times 2\frac{1}{2}$ .

spicuous than the others. The fifth, sixth, and seventh have each a median tubercle, and on either side of it a group of two large tubercles surrounded by low areolations.

The abdomen consists of a single segment, with a suture line on either side at the base, indicating another partly coalesced segment. The abdomen tapers to a narrow extremity, which posteriorly is notched.

The first pair of legs are shorter than the following six pairs, and are prehensile. All the others are similar, and have the basis produced on the upper side in a ridge which is bilobate.

Eight specimens of this species come from the following localities: Station 5020, station 5021, station 5023, and station 5024, off the eastern coast of Saghalin Island, vicinity of Cape Patience, in Okhotsk Sea, at lat.  $48^{\circ} 32' 45''$  N.; long.  $145^{\circ} 07' 30''$  E.; lat.  $48^{\circ} 32' 30''$  N.; long.  $145^{\circ} 08' 45''$  E.; Flat Hill, N.  $53^{\circ}$  W.; Cape Patience, S.  $77^{\circ}$  W. (lat.  $48^{\circ} 43' 30''$  N.; long.  $145^{\circ} 03'$  E.); Flat Hill, N.  $48^{\circ}$  W.; Cape Patience, S.  $74^{\circ}$  W. (lat.  $48^{\circ} 43' 10''$  N.; long.  $144^{\circ} 59' 30''$  E.), at a depth of 67–75 fathoms, in sand, pebbles, and green mud.

This species is perhaps closer to *Synidotea consolidata* (Stimpson), from Pacific Grove, than to any other species.

*Type-specimen*.—Cat. No. 39519, U.S.N.M.

#### Genus CLEANTIS Dana.

##### CLEANTIS ISOPUS Miers.

*Cleantis isopus* MIERS, Journ. Linn. Soc. London, vol. 16, 1883, pp. 80–81, pl. 3, figs. 9–11.—GRUBE (MS. in Brit. Mus.).

*Locality*.—Two specimens from Hakodate Bay, Japan; four specimens from Mororan, Japan. Miers's specimens were from Ojica, Goto Island, lat.  $33^{\circ} 12' 30''$  N.; long.  $129^{\circ} 5'$  E. Grube's specimens were from Chefoo.

*Depth*.—Taken on the shore.

The palp of the maxilliped is composed of five articles as in *Cleantis planicauda* Benedict.

#### ASELLOIDEA or ASELLOTA.

##### Family JANIRIDÆ.

##### Genus JANIRA Leach.

##### JANIRA JAPONICA, new species.

Body oblong-ovate. Color, in alcohol, yellow. Surface smooth and free from spines.

Head wider than long, with the front between the antero-lateral angles, triangularly produced. Antero-lateral angles narrow and but little produced; their extremities are rounded. Eyes large, oval, composite, and placed halfway between the anterior and the posterior margins, and a distance from the lateral margin equal to the width of one eye. The first pair of antennæ have a peduncle of

three articles and a flagellum of about ten articles. The second pair of antennæ are broken at the end of the third article; there is a scale articulated to the third article.

The first three segments of the thorax are about equal in length; the fourth and fifth are shorter; the last two are subequal and are the longest. The lateral margin of the first segment has the posterior half produced in a slight rounded lobe; the epimeron is situated on the anterior half of the lateral margin and is in the form of an angular lobe, projecting as far as the posterior lobe of the lateral margin. The lateral margin of the second segment is straight, with the anterior and posterior angles slightly produced in a lobe; the epimeron is small, bilobed, and placed between the anterior and the posterior lobes. The third segment has the lateral margin nearly straight, with the anterior and posterior angles also slightly produced in a lobe; the epimeron consists of two rounded lobes placed between the anterior and the posterior lobes. The fourth segment has the antero-lateral margin produced in a rounded lobe; the epimeron consists of a double lobe placed below this. The fifth segment has the anterior angle of the lateral margin, slightly produced in a lobe; the epimeron consists of a double lobe just posterior to the posterior lobe of the segment.

The sixth and seventh segments have the anterior part of the lateral margins produced in a large lobe, with the epimeron double and placed on the posterior half of the lateral margin.

The abdomen has the posterior margin broadly triangular, the median angle and the lateral angles rounded. The uropoda are about as long as the abdomen. The branches are almost equal in length, the outer one being but slightly shorter than the inner. They are about one and a half times longer than the peduncle. The first pair of legs are prehensile; the following six pairs are ambulatory and furnished with biunguiculate dactyli.

Only one specimen, a female, was collected at station 4915, 10 to 20 miles southwest of Koshika Islands, Eastern Sea, at Tsurikake Saki Light, N. 62° E., 14.8 miles (lat. 31° 31' N.; long. 129° 25' 30'' E.), at a depth of 427 fathoms in gray globigerina ooze and broken shells.

*Type-specimen.*—Cat. No. 39520, U.S.N.M.

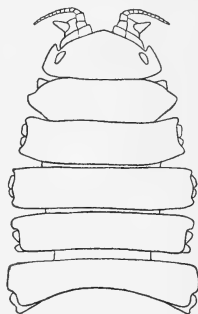


FIG. 36.—JANIRA JAPONICA. HEAD AND FIRST FIVE SEGMENTS OF THORAX.  $\times 93$ .

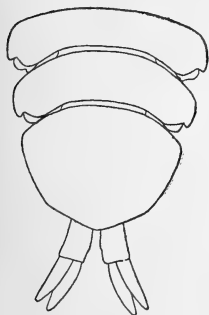


FIG. 37.—JANIRA JAPONICA. LAST TWO SEGMENTS OF THORAX AND ABDOMEN.  $\times 93$ .

## MICROPROTUS, new genus.

Head with short truncated rostrum and without eyes. First pair of antennæ with the first article of the first pair of antennæ produced at the outer anterior angle; flagellum multi-articulate. Second antennæ with the flagellum multi-articulate.

Molar expansion of mandibles well developed. Palp three jointed. First four segments of thorax provided each with three long dorsal spines, one in the median line, and one on either side, at the antero-lateral angle; the last three segments provided with three long spines, one median and one on either side, all close together, and the antero-lateral angles produced in a long spine on either side.

The epimera of the second, third, and fourth segments of the thorax produced in two spines, the anterior one being longer. The epimera of the last three segments, in the form of small rounded lobes, situated on the posterior half of the segment.

Abdomen with the lateral margins produced in two spines on either side, and the posterior margin produced in two spines.

Uropoda consisting of a peduncle and two branches.

The first pleopoda of the male have the distal extremity of the peduncle produced.

First pair of legs small, short, and feeble; the following six pairs robust and similar in character. The second, third, and fourth pairs gradually increase in length. Dactylus bi-unguiculate.

This genus has affinities with the *Munnopsidæ*. The short, truncated rostrum, the absence of eyes, the small and short first pair of legs as compared with the three following pairs and the form of the first article of the first pair of antennæ are characters similar to those found in that family. The absence of natatory legs, the general form of the body and the style of uropods, however, are characters referable to the *Janiridæ*.

The type of the genus is *Microprotus cæcus*, the description of which follows:

## MICROPROTUS CÆCUS, new species.

Head, with the anterior margin almost straight, and produced in the middle in a small, truncated rostrum. Eyes wanting. First pair of antennæ, with the first article large and produced at the outer anterior angle; second article about half as long as the first and only half as wide; third article more slender than the second and a little longer. Second antennæ with the second article of the peduncle provided with a long spine; the third article is provided with a long spine on the underside; the fourth article is provided with two long spines, one above and one on the underside; the fifth and sixth articles are long and slender and are not armed. The flagellum is elongate and multiarticulate.

The first segment of the thorax is provided with three spines, one in the middle on the anterior margin and one at the antero-lateral angle on either side. The median spine is about twice as long as the lateral spines. The second, third, and fourth segments are each provided with three spines, one median spine on the anterior margin and a spine on either side on the anterior margin close to the lateral margin; these spines are all of nearly equal length; the epimera of these segments are drawn out in two spines, an anterior spine and a posterior spine, the anterior one being twice as long as the posterior one. The three following segments are each furnished with three spines in a transverse row near the posterior margin, a median small spine and one on either side, some distance from the lateral margin; the lateral spines are longer than the median spines and decrease gradually in length from the fifth to the seventh segments; the antero-lateral angles of these last three segments are produced in an extremely

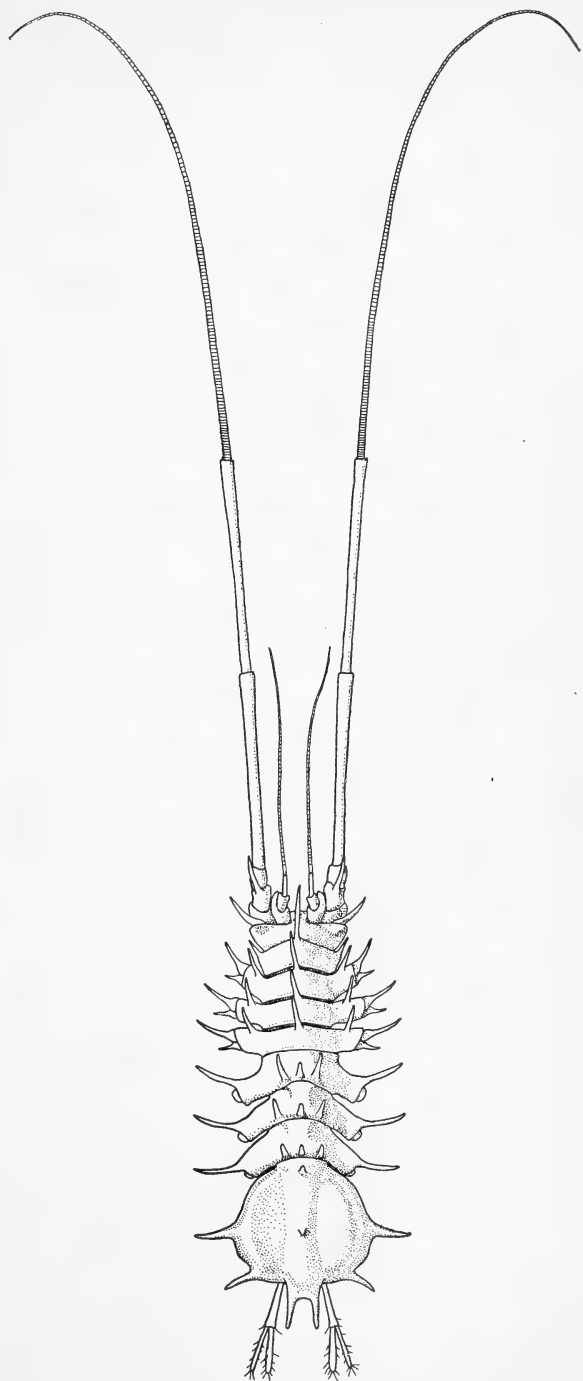


FIG. 38.—MICROPROTUS CECUS.  $\times 3.8$ . (Drawn by Miss V. Dandridge.)

long spine, one on other side; the epimera are in the form of small rounded lobes at the post-lateral angles and are unarmed.

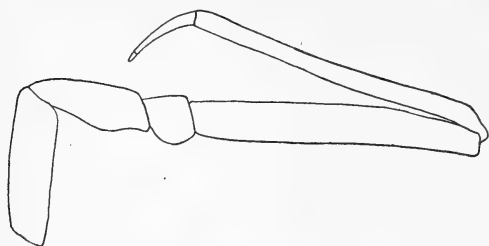


FIG. 39.—MICROPROTUS CÆCUS. SECOND THORACIC LEG.  $\times 14\frac{1}{2}$ .

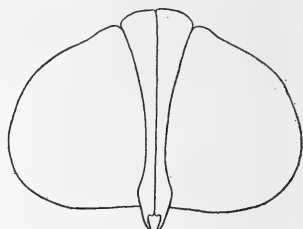


FIG. 40.—MICROPROTUS CÆCUS. FIRST AND SECOND PLEOPODS OF MALE.  $\times 9\frac{3}{4}$ .

The abdomen consists of a single large segment, which is produced on either side about the middle in a single long spine, directed outward, and at the post-lateral angle in another long spine, also directed outward. The abdomen is posteriorly produced in a process terminating in two long spines, one on either side of the median line. At the base of the abdomen in the median line is a single small tubercle. There is also a single small tubercle in the middle of the segment on the dorsal surface. The peduncle of the uropoda is long and slender, and reaches almost to the extremity of the terminal spines of the abdomen. The branches are about equal in length and also about as long as the peduncle.

The first pair of legs are very small, short, and feeble. The following six pairs are robust and similar in character. The second, third, and fourth pairs gradually increase in length. All the articles are long and slender, especially the merus and propodus. The legs terminate in bi-unguiculate dactyli.

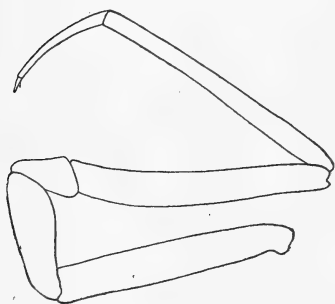


FIG. 42.—MICROPROTUS CÆCUS. SIXTH LEG.  $\times 14\frac{1}{2}$ .



FIG. 41.—MICROPROTUS CÆCUS. FIRST THORACIC LEG.  $\times 14\frac{1}{2}$ .

Only a single specimen, a male, was collected at station 4781, on the way from "Petrel Bank," Bering Sea, to McDonald Bay, Agattu Island, Aleutians, by the passage east of Semisopochnoi and Amchitka Islands at lat.  $52^{\circ} 14' 30''$  N.; long.  $174^{\circ} 13'$  E. at a depth of 300 fathoms in fine gray sand and pebbles. An imperfect specimen, a male, also comes from the same locality.

*Type-specimen.*—Cat. No. 39521, U.S.N.M.



## Family MUNNOPSIDÆ.

## Genus MUNNOPSIS M. Sars.

## MUNNOPSIS LATIFRONS Beddard.

*Munnopsis latifrons* BEDDARD, Proc. Zool. Soc. London, 1885, pt. 4, p. 917; Challenger Report, vol. 17, 1886, p. 56, pl. 10, figs. 1-4.

*Localities*.—Station 5082, off Omai Saki Light (20 to 40 miles distant), N.  $22^{\circ}$  E., 33 miles (lat.  $34^{\circ} 5' N.$ ; long.  $137^{\circ} 59' E.$ ); station 4919, about 90 miles WSW. of Kagoshima Gulf, Eastern Sea, at Kusakaki Jima, N.  $18^{\circ}$  E., 17.6 miles (lat.  $30^{\circ} 34' N.$ ; long.  $129^{\circ} 19' 30'' E.$ ).

Beddard's specimen was from off Ino Sima Island, Japan.

*Depth*.—Six hundred and sixty-two fathoms in green mud, fine sand, and globigerina; 440 fathoms in globigerina ooze.

Beddard's specimen came from a depth of 345 fathoms in green mud.

Four specimens of this species were collected by the United States Bureau of Fisheries steamer *Albatross*. In his description of the form Beddard says: "The abdominal shield was, unfortunately, considerably damaged, so that its shape can not be described with great accuracy; it appears to be more or less oval in form and truncated at its free extremity; laterally and just in front of the articulation of the long styliform uropoda is a spiny process directed backward nearly in the same straight line with the longitudinal axis of the abdominal shield."



FIG. 44.—MUNNOPSIS LATIFRONS. SEVENTH LEG.  $\times 4\frac{3}{4}$ .

Beddard's specimen was imperfect, I have made a drawing of the abdomen as it appears in the *Albatross* specimen. I have also made a drawing of one of the natatory legs.

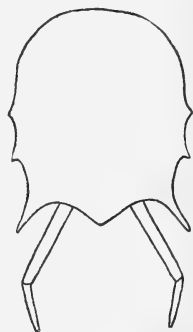


FIG. 43.—MUNNOPSIS LATIFRONS. ABDOMEN.  $\times 4\frac{3}{4}$ .

## MUNNOPSIS, new species.

About twelve specimens of a new species of *Munnopsis* were collected from stations 4765, 4766, 4793, and 4800. All the specimens were mutilated, so that a complete description is not possible.

## Genus EURYCOPE G. O. Sars.

## EURYCOPE LÆVIS, new species.

Body oblong-ovate, about two and a half times longer than wide, 4 mm.: 10 mm.

Surface perfectly smooth; color, in alcohol, yellow.

Head much wider than long, with the anterior margin produced in the middle in a wide truncated process. Eyes absent. First pair of antennæ with the first article large and dilated; the second and third are very short and about equal in length. The flagellum is composed of numerous articles. The second antennæ are broken at the end of the third article.

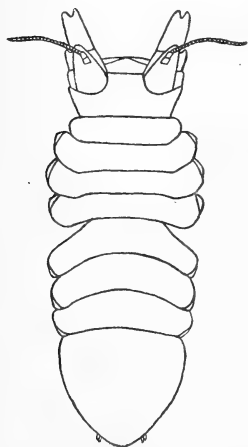


FIG. 45.—EURYCOPE LÆVIS.  
× 5½.

The first four segments of the thorax are about equal in length and they are also about as long as the head. The first segment is as wide as the head; the three following are equal in width and a little wider than the first. Epimera are present on the second, third, and fourth segments in the form of narrow plates occupying the entire lateral margin. The last three segments of the thorax gradually increase in length; the fifth is about one and a half times longer than the fourth,

but is of equal width; the sixth is twice as long as the fourth; the seventh is about two and a half times longer than the fourth. Epimera are present on the last three segments in the form of narrow plates occupying the posterior two-thirds of the lateral margin.

The abdomen consists of a single, large segment, tapering posteriorly to a rounded extremity. The uropoda are double-branched, both branches being very small and short, the inner slightly longer than the outer.

The first pair of legs are shorter than the three following pairs, which are greatly elongated and gradually increase in length. The last three pair are natatory.

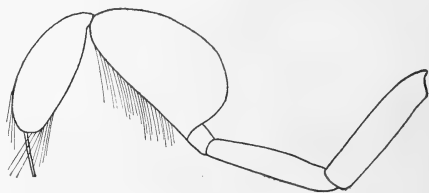


FIG. 46.—EURYCOPE LÆVIS. ONE OF THE  
NATATORY LEGS. × 14½.

Only three specimens, all mutilated, come from station 4907, 10–20 miles southwest of Koshika Islands, Eastern Sea, at Tsurikake Saki Light, S. 83° E., 14.7 miles (lat. 31° 39' 30'' N.; long. 129° 24' E.) at a depth of 406 fathoms in gray globigerina ooze; from station 4774,

on "Bowers Bank," Bering Sea, at lat.  $54^{\circ} 33' N.$ ; long.  $178^{\circ} 45' E.$ , at a depth of 557 fathoms; and station 5037, off Otchishi Saki, eastern end of Hokkaido, Pacific Ocean, at Urakawa Light, N.  $52\frac{1}{2}^{\circ} E.$ , 11.9 miles (lat.  $42^{\circ} 02' 40'' N.$ ; long.  $142^{\circ} 33' 20'' E.$ , at a depth of 349 fathoms.

The only species of *Eurycope* recorded from Japan is *E. fragilis* Beddard<sup>a</sup> from off Yokohama, which is entirely different from the species described here.

*Type-specimen*.—Cat. No. 39522, U.S.N.M.

## BOPYROIDEA or EPICARIDEA.

### Family BOPYRIDÆ.

#### Genus PHRYXUS Rathke.

##### PHRYXUS ABDOMINALIS Krøyer.

*Bopyrus abdominalis* KROYER, Nat. Tidsskr., vol. 3, 1840-1841, pp. 102-112, 289-299, pls. 1, 2.

*Phryxus abdominalis* LILLJEBORG, Öfvers, Kongl. Vet. Akad. Forh., vol. 9, 1852, p. 11.—HARGER, Report U. S. Fish Comm., 1880, pt. 6, p. 312. (See Harger for further synonymy).—RICHARDSON, Bull. U. S. Nat. Mus. No. 54, 1905, pp. 500-503.

*Localities*.—Station 4814, on the way from Hakodate, Japan, to Ebisu, Sado Island, Sea of Japan, at north point Sado Island, S.  $42^{\circ} W.$ , 15.7 miles (lat.  $38^{\circ} 32' N.$ ; long.  $138^{\circ} 43' E.$ ) on *Spirontocaris*, species (?) at a depth of 429 fathoms; station 4782, on the way from Agattu Island to Chichagof Harbor, Attu Island, by the Semichi Islands, Aleutians, at East Cape, Attu Island, S.  $22^{\circ} W.$ , 4 miles (lat.  $52^{\circ} 55' N.$ ; long.  $173^{\circ} 27' E.$ ) at a depth of 57 fathoms; station 4992, on the way from Otaru, Hokkaido, Japan, to Korsakov, Aniwa Bay, Saghalin Island (by the Gulf of Tartary and La Perouse Strait) at Bomasiri Shima (off N. end of Rebun To), N.  $52^{\circ} E.$ , 8 miles (lat.  $45^{\circ} 24' N.$ ; long.  $140^{\circ} 49' 10'' E.$ ), on *Spirontocaris*, species (?) at a depth of 325 fathoms; station 4853, on the way from Matsu Shima, Sea of Japan (off coast of Korea), to Nagasaki, Japan, at C. Clonard, S.  $80^{\circ} W.$ , 9.8 miles (lat.  $36^{\circ} 08' N.$ ; long.  $129^{\circ} 49' E.$ ) on *Spirontocaris* species (?) at a depth of 335 fathoms; station 5020, off eastern coast Saghalin Island, vicinity of Cape Patience, in Okhotsh Sea, at lat.  $48^{\circ} 32' 45'' N.$ ; long.  $145^{\circ} 07' 30'' E.$  on *Spirontocaris* species (?) at a depth of 73 fathoms, and station 5021, at lat.  $48^{\circ} 32' 30'' N.$ ; long.  $145^{\circ} 08' 45'' E.$  on *Spirontocaris* species (?); station 5045, south coast of Hokkaido, at lat.  $42^{\circ} 11' 10'' N.$ ; long.  $14^{\circ} 12' E.$  on *Spirontocaris* species (?) at a depth of 359 fathoms.

*Character of bottom*.—Found in rocks and gravel and in brown mud.

<sup>a</sup> Challenger Report, vol. 17, 1886, pp. 63-66, pl. 9, figs. 8-12.

## Genus PARAPENÆON Richardson.

## PARAPENÆON CONSOLIDATA Richardson.

*Parapenæon consolidata* RICHARDSON, Proc. U. S. Nat. Mus., vol. 27, 1904, pp. 43-44.

*Localities*.—At Tsuruga on a Penæid; station 4942, in Kagoshima Gulf at Chirin Jima  $\Delta$ , S.  $124^{\circ}$  E., 6.6 miles (lat.  $31^{\circ} 23' 10''$  N.; long.  $130^{\circ} 39' 10''$  E.), from branchial cavity of a Penæid.

*Depth*.—One specimen was collected on the shore; the other comes from a depth of 118 fathoms.

The type-specimen is from Mogi, Japan.

## Genus ARGEIA Dana.

## ARGEIA PUGETTENSIS Dana.

*Argia pugettensis* DANA, U. S. Expl. Exp., Crust., vol. 14, 1853, p. 804, pl. 53, fig. 7.—STIMPSON, Bost. Journ. Nat. Hist., vol. 6, 1857, p. 511.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 868; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 337; American Naturalist, vol. 34, 1900, p. 308.—BONNIER, Travaux de la Station Zool. de Wimereux, vol. 8, 1900, pp. 327-328.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 27, 1904, pp. 60-64; Bull. U. S. Bureau of Fisheries, vol. 24, 1905, p. 220; Bull. U. S. Nat. Mus., No. 54, 1905, pp. 544-550.

*Argia*, species (?) CALMAN, Ann. N. Y. Acad. Sci., vol. 11, 1898, p. 281.

*Argia calmani* BONNIER, Travaux de la Station Zool. de Wimereux, vol. 8, 1900, p. 329.

*Localities*.—Hakodate, Japan; station 5000, in the Gulf of Tartary, off southwestern coast of Saghalin, at lat.  $47^{\circ} 35'$  N.; long.  $141^{\circ} 43'$  E., and station 5003, lat.  $47^{\circ} 32' 30''$  N.; long.  $141^{\circ} 45'$  E.; station 4870, on the way from Matsu Shima, Sea of Japan (off coast of Korea) to Nagasaki, Japan, at lat.  $36^{\circ} 30' 30''$  N.; long.  $129^{\circ} 43'$  E.

*Depth*.—Surface light; 31-94 fathoms in green mud and gray sand.

Parasitic on *Nectocrangon*, species (?)

## Genus BOPYROIDES Stimpson.

## BOPYROIDES HIPPOLYTES (Krøyer).

*Bopyrus hippolytes* KRØYER, Kongelige Danske Videnskabenes Selskabs naturvidenskabelige og mathematiske Afhandlinger, vol. 7, 1838, p. 306 (78), pl. 4, fig. 22.

*Bopyroides acutimarginatus* STIMPSON, Proc. Acad. Nat. Sci. Phila., vol. 16, 1864, p. 156.

*Gyge hippolytes* HARGER, Report U. S. Fish Comm., 1880, pt. 6, p. 311.

*Bopyroides hippolytes* RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 567-572. (See Richardson for further synonymy.)

*Localities*.—Unalaska on *Spirontocaris*, species (?); station 4778, on "Petrel Bank," Bering Sea, at Semisopochnoi Island, r. t. S.  $45^{\circ}$  W., l. t. S.  $12^{\circ}$  W. about 12 miles (lat.  $52^{\circ} 12'$  N.; long.  $179^{\circ} 52'$  E.) on

*Spirontocaris*, species (?); station 4788, on the way from Preobrajeniya Bay, Mendi Island, to Nikolski Bay, Bering Island, by the passage between islands at North point Copper Island, N.  $76^{\circ}$  E., 8.8 miles (lat.  $54^{\circ} 50' 24''$  N.; long.  $167^{\circ} 13'$  E.); station 4819, on the way from Ebisu, Sado Island, to Nanao, Noto Peninsula, Hondo, Japan, at Hime Saki Light, S.  $16^{\circ}$  E., 3.8 miles (lat.  $38^{\circ} 09'$  N.; long.  $138^{\circ} 32' 12''$  E.).

*Depth*.—Forty-three to two hundred and forty-five fathoms in green sand and fine brown mud.

*Remarks*.—The specimen from station 4778 has five pairs of small, rounded tubercles on the fleshy ridges or modified appendages of the abdomen (the pleopoda).

### Family DAJIDÆ.

#### Genus HOLOPHRYXUS Richardson.

##### HOLOPHRYXUS GIARDI Richardson.

*Holophryxus giardi* RICHARDSON, Proc. U. S. Nat. Mus., vol. 33, 1908, pp. 690–692.

*Locality*.—Station 4793, on the way from Nikolski Bay, Bering Island, Komandorski Islands, to Petropaulovsk, Avatcha Bay, Kamchatka, at Toporkov Island, harbor of Nikolski, Bering Island, N.  $58^{\circ}$  E., 44 miles (lat.  $54^{\circ} 48'$  N.; long.  $164^{\circ} 54'$  E.).

*Depth*.—Two thousand seven hundred fathoms.

Parasitic on *Gennadas borealis* Rathbun.

##### HOLOPHRYXUS CALIFORNIENSIS Richardson.

*Holophryxus californiensis* RICHARDSON, Proc. U. S. Nat. Mus., vol. 33, 1908, pp. 692–694.

*Locality*.—On the way from Yes Bay to Seattle, at Bushby Point.

*Depth*.—One hundred and fifty to two hundred and eighty fathoms.

Parasitic on *Pasiphaea pacifica* Rathbun.

#### Genus ARTHROPHRYXUS Richardson.

##### ARTHROPHRYXUS BERINGANUS Richardson.

*Arthropryxus beringanus* RICHARDSON, Proc. U. S. Nat. Mus., vol. 33, 1908, pp. 695–696.

*Locality*.—One female, with Schizopoda but not attached, from station 4760, on the way from Union Bay, British Columbia, to Dutch Harbor, Alaska, by the Goletas Channel and Unalga Pass, at lat.  $53^{\circ} 53'$  N.; long.  $144^{\circ} 53'$  W.

*Depth*.—Two thousand two hundred fathoms.

The type-specimen came from station 4793, on the way from Nikolski Bay, Bering Island, Komandorski Islands, to Petropaulovsk,

Avatcha Bay, Kamchatka, at Toporkov Island, harbor of Nikolski, Bering Island, at a depth of 2,700 fathoms; it was parasitic on *Eucopia australis*.

PROPHRYXUS, new genus.

Body of adult female irregular in outline. Head and first three segments of thorax defined. Last four thoracic segments indicated only in the dorsal region. Lateral parts of thorax swollen and extending backward in a small rounded lobe on either side.

Five abdominal segments defined. Pleopods rudimentary.

Five pairs of legs surround the oral area.

Male unknown.

*Type of genus.*—*Prophryxus alascensis*.

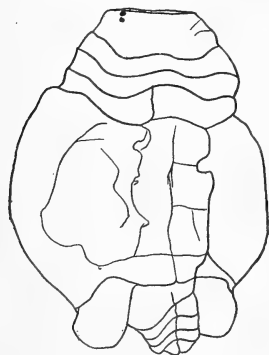


FIG. 47.—PROPHRYXUS ALASCENSIS. DORSAL VIEW OF ADULT FEMALE.  $\times 19\frac{1}{2}$ .

PROPHRYXUS ALASCENSIS, new species

Body of adult female oval in outline, with the front somewhat quadrangular, more or less depressed. Lateral parts of body swollen, but not projecting anteriorly. Head extending straight in front, with the anterior margin straight. Two little black spots on one side may represent one eye. Head indistinctly defined from thorax.

The first three segments of the thorax are indistinctly indicated; they extend from one side of the body to the other. The following four segments are only indicated in the middle of the dorsal region. The lateral parts of the thorax are expanded and unsegmented, and extend backward in a small posterior lobe on either side of the abdomen, reaching almost to its extremity.

The abdomen consists of five indistinctly defined segments, indicated more on one side of the body than on the other. The fifth or terminal segment is bilobate.

In a ventral view of the body there are five pairs of legs surrounding the oral area. There seem to be rudimentary pleopods.

Only one specimen was obtained at station 4759, on the way from Union Bay, British Columbia, to Dutch Harbor, Alaska, by the Goletas Channel and Unalga Pass, at lat.  $53^{\circ} 05' N.$ ; long.  $138^{\circ} 31' W.$  It was taken at a depth of 2,000 fathoms with a schizopod, but unattached.

*Type-specimen.*—Cat. No. 39523, U.S.N.M.



FIG. 48.—PROPHRYXUS ALASCENSIS. VENTRAL VIEW.  $\times 19\frac{1}{2}$ .

Attached to one of the legs of *Æga symmetrica* Richardson was a parasite, the outline of which was more or less irregularly transversely oval, with no traces of segmentation on the dorsal surface. The body seems to be converted into a sac for carrying the eggs,

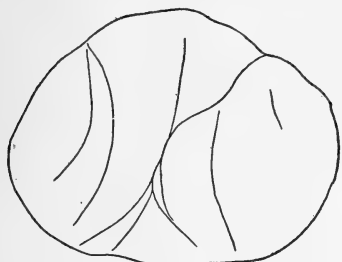


FIG. 49.—ISOPOD PARASITE. DORSAL VIEW.  $\times 14\frac{1}{2}$ .

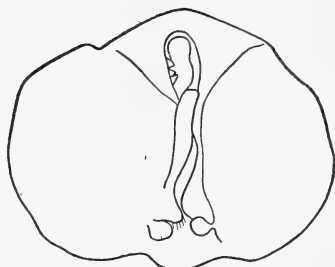


FIG. 50.—ISOPOD PARASITE. VENTRAL VIEW.  $\times 14\frac{1}{2}$ .

which fill the lateral portions and can be seen through the thin, almost transparent integument. On the ventral side at the anterior end is the oral opening, below which are the lamellæ which bound the opening into the marsupial cavity. Below these lamellæ are two small oval lamellæ, one on either side.

*Type-specimen*.—Cat. No. 39524, U.S.N.M.

## ONISCOIDEA.

### Family LIGYDIDÆ.

#### Genus LIGYDA Rafinesque.

##### LIGYDA PALLASII (Brandt).

*Ligia pallasii* BRANDT, Bull. Soc. Impér. des Natur. de Moscou, vol. 6, 1833, p. 172.

*Ligia dilatata* STIMPSON, Bost. Jour. Nat. Hist., vol. 6, 1857, p. 507, pl. 22, fig. 8.—SMITH, Report Progress Geol. Survey of Canada, 1880, p. 218.—UNDERWOOD, Bull. Ill. State Lab. Nat. Hist., vol. 2, 1886, p. 361.

*Ligia septentrionalis* LOCKINGTON, Proc. Cal. Acad. Sci., vol. 7, 1877, pt. 1, p. 46.

*Ligia stimpsoni* MIERS, Proc. Zool. Soc. London, 1877, p. 671 (footnote).

*Ligia pallasii* BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 261–262.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 866; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 334; American Naturalist, vol. 34, 1900, p. 306; Harriman Alaska Expedition, Crust., vol. 10, 1904, p. 226; Proc. U. S. Nat. Mus., vol. 27, 1904, p. 670.

*Ligia pallasii* RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 682–684.

*Localities*.—Attu Island; Nazan Bay, Atka.

*Depth*.—Shore.

##### LIGYDA EXOTICA (Roux).

*Ligia exotica* ROUX, Crust. Medit., 1828, p. 3, pl. 13, fig. 9.—BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 266–268.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 866; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 335; American Naturalist, vol. 34, 1900, p. 306; Proc. U. S. Nat. Mus., vol. 23, 1901, p. 575.

*Ligia gaudichaudii* DANA, U. S. Expl. Exp., Crust., vol. 14, 1853, p. 741, pl. 49, figs. 6a-h.

*Ligyda exotica* RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 676-677.

*Localities*.—Matsushima; Same, Rikuoku, Japan.

*Depth*.—Shore.

LIGYDA CINERASCENS (Budde-Lund).

*Ligia cinerascens* BUDDE-LUND, Crust. Isop. Terrestria, 1885, p. 265.

*Locality*.—Hakodate, Japan. Budde-Lund says of the type that it is uncertain whether it comes from Manila or Chile, or was taken in Japan, but he thinks it very likely to have come from Japan.

About six specimens, which I hesitatingly refer to this species, were taken at Hakodate, Japan. They differ from *Ligyda exotica* in having shorter antennæ which do not reach beyond the last thoracic segment and in the much shorter uropoda, which do not quite equal half the length of the body. The body is also more thickly granulated than that of *L. exotica*, and the color is uniformly dark gray.

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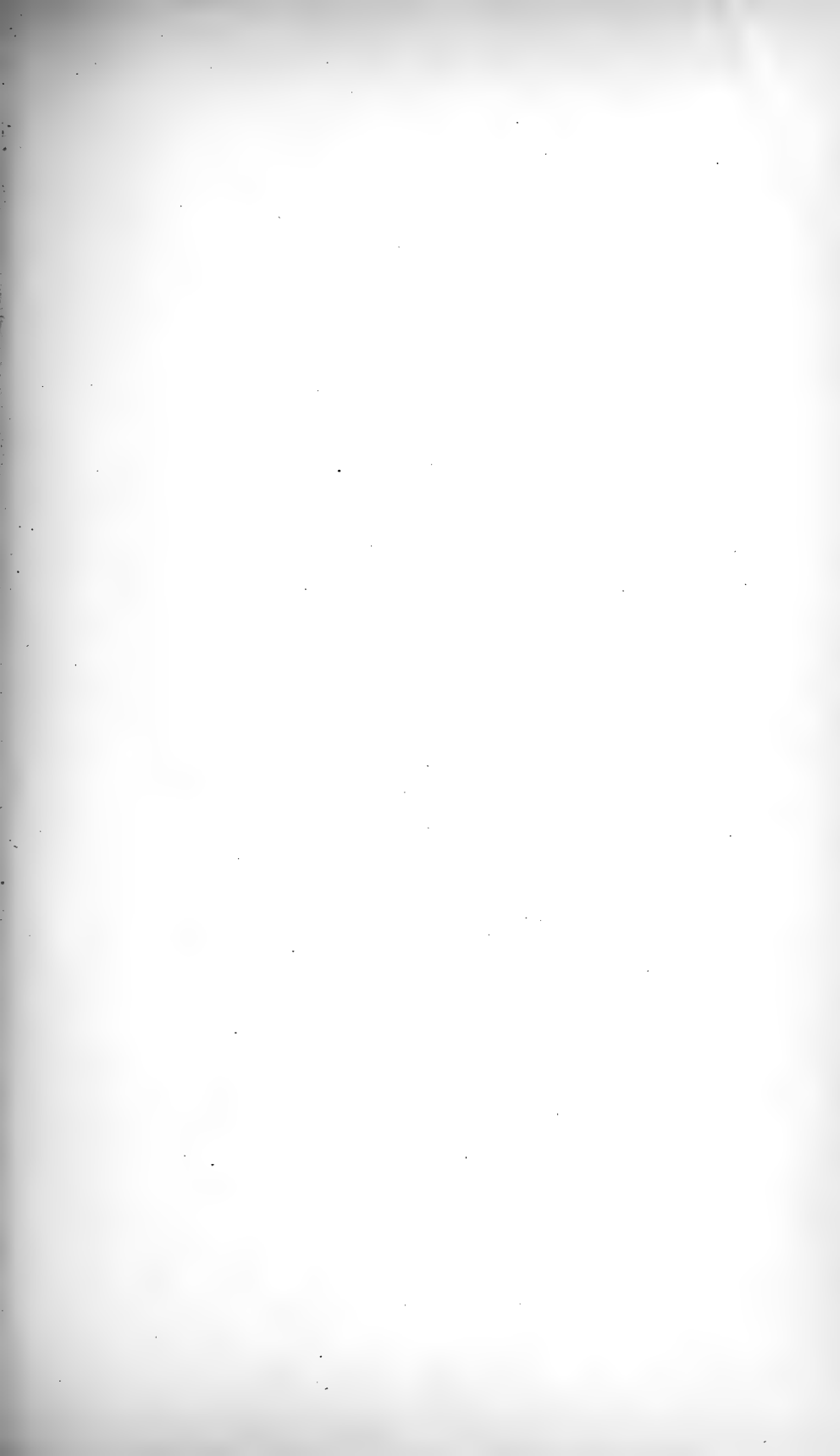
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13

DESCRIPTION OF A NEW TERRESTRIAL ISOPOD  
FROM GUATEMALA

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

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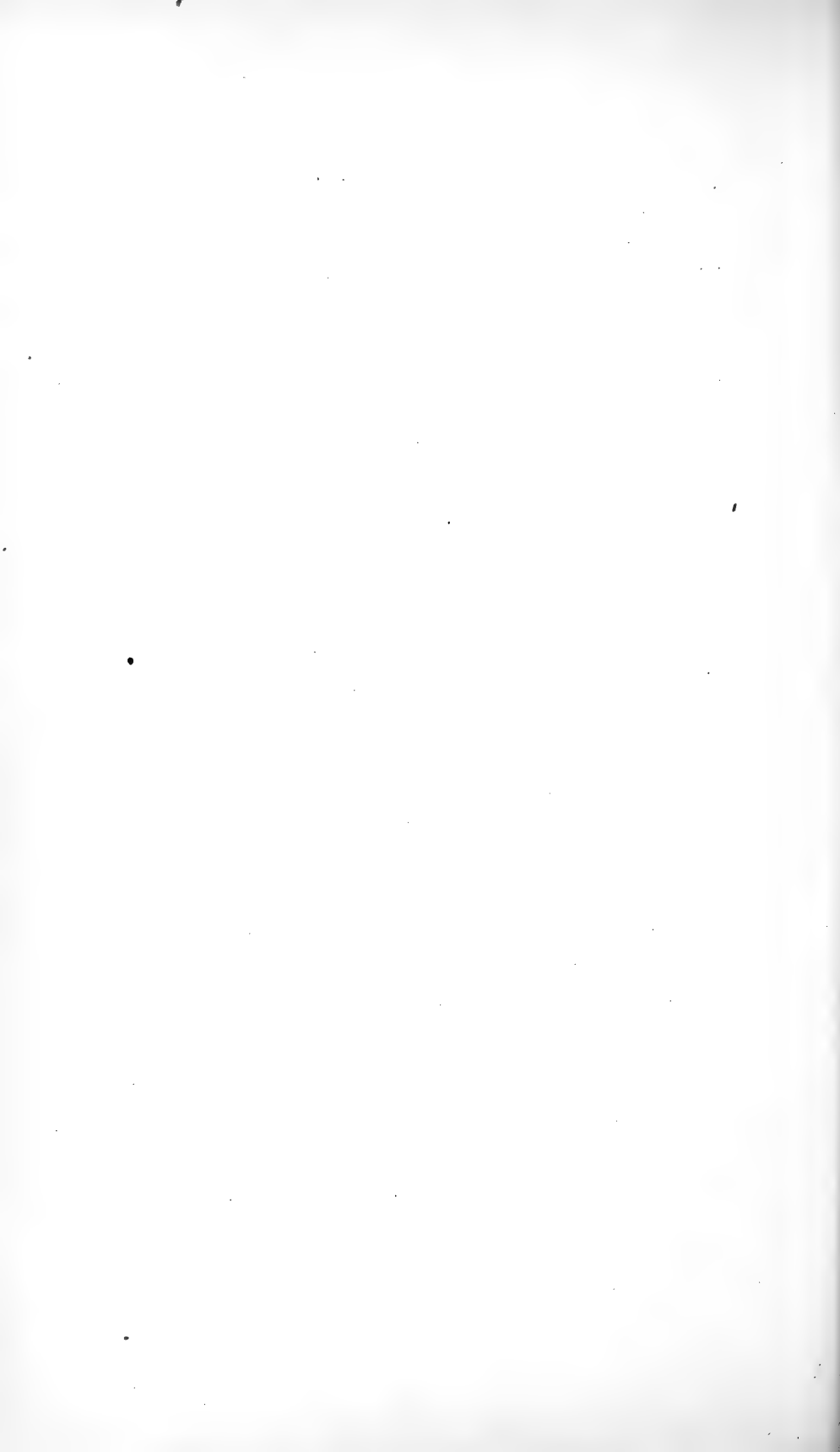
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## DESCRIPTION OF A NEW TERRESTRIAL ISOPOD FROM GUATEMALA.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

The isopod to be described resembles in general appearance and in its spiny armature the form described by Kinahan, from Jamaica, as *Acanthoniscus spiniger*. Notwithstanding the striking superficial similarity of the two species, they can not be referred to the same genus.

Family ARMADILLIDIDÆ.

GLOBARMADILLO, new genus.†

Body covered with long spines. Head wider than long; eyes distinct.

Second pair of antennæ with a flagellum composed of two articles, the first being very short.

Thorax with no epimera distinctly separated from the segments either above or on the under side.

Abdomen with the terminal segment triangular, ending posteriorly in an acute apical point.

Uropoda with the basal article or peduncle wider than long, situated somewhat obliquely; the inner branch is inserted at the inner post-lateral angle of the basal article; the outer branch is short, hidden in a dorsal view, and does not reach the tip of the terminal abdominal segment.

The type of the genus is *Globarmadillo armatus*, new species.

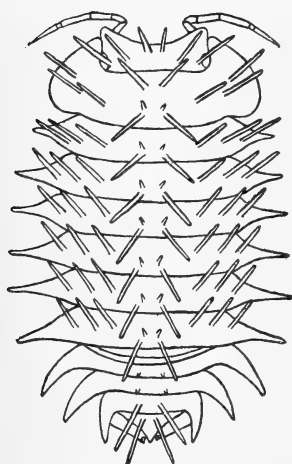
GLOBARMADILLO ARMATUS, new species.

Body contractile, capable of being rolled up into a ball. Surface covered with long spines.

Head broader than long, with the front slightly excavate and the antero-lateral angles acutely produced. There are six long spines on the head, two just back of the anterior margin, close together, one on either side of the median line, and four on the posterior half of the head between the eyes, two on either side of the median line,

the two middle ones being farther apart and longer than those on the anterior portion of the head. The eyes are small, composite, and situated close to the lateral margin. The first pair of antennæ is inconspicuous and rudimentary. The second pair has the first article of the peduncle short; the second is much longer; the third is not so long as the second; the fourth is twice as long as the third; the fifth is a little longer than the fourth; the flagellum consists of two articles, the first of which is minute, the second long and tapering and furnished with a long spine at the tip.

The first segment of the thorax is furnished with ten long spines and two small ones. There are two long spines close together on the anterior portion, one on either side of the median line, six long spines on the middle portion, three on either side of the median



GLOBARMADILLO ARMATUS (DIAGRAMMATIC).

line, and two long ones on the posterior portion, close together, one on either side of the median line. There are two short spines just anterior to the two long spines on the posterior portion. The lateral parts of the first segment are produced anteriorly and posteriorly into a wide plate on either side. The second segment is furnished with eight long spines and two short ones. Six of these long ones are arranged in a transverse row about the middle, three on either side of the median line, and two are placed near the posterior margin, close together, one on either side of the median line. The two small spines are placed just in front of the two long ones near the posterior margin. In the following five segments the spines are the same in number and arranged in

the same manner as in the second segment. The lateral parts of all six segments are produced into long narrow spine-like processes. Epimera are not distinct on any of the segments either on the dorsal or ventral side.

The first two segments of the abdomen are short and unarmed; their lateral parts are covered by the last thoracic segment; the following three segments are furnished each with two spines close together, one on either side of the median line, those on the third and fourth segments being short and those on the fifth segment long. The lateral parts of the third, fourth, and fifth segments are produced in long, narrow tapering processes. The sixth or terminal segment is triangular, broad at the base and with the posterior margin acutely produced in the middle. The basal portion of the segment

is furnished with two long spines. The uropoda occupy all the space between the lateral parts of the fifth segment and the apical part of the sixth segment.

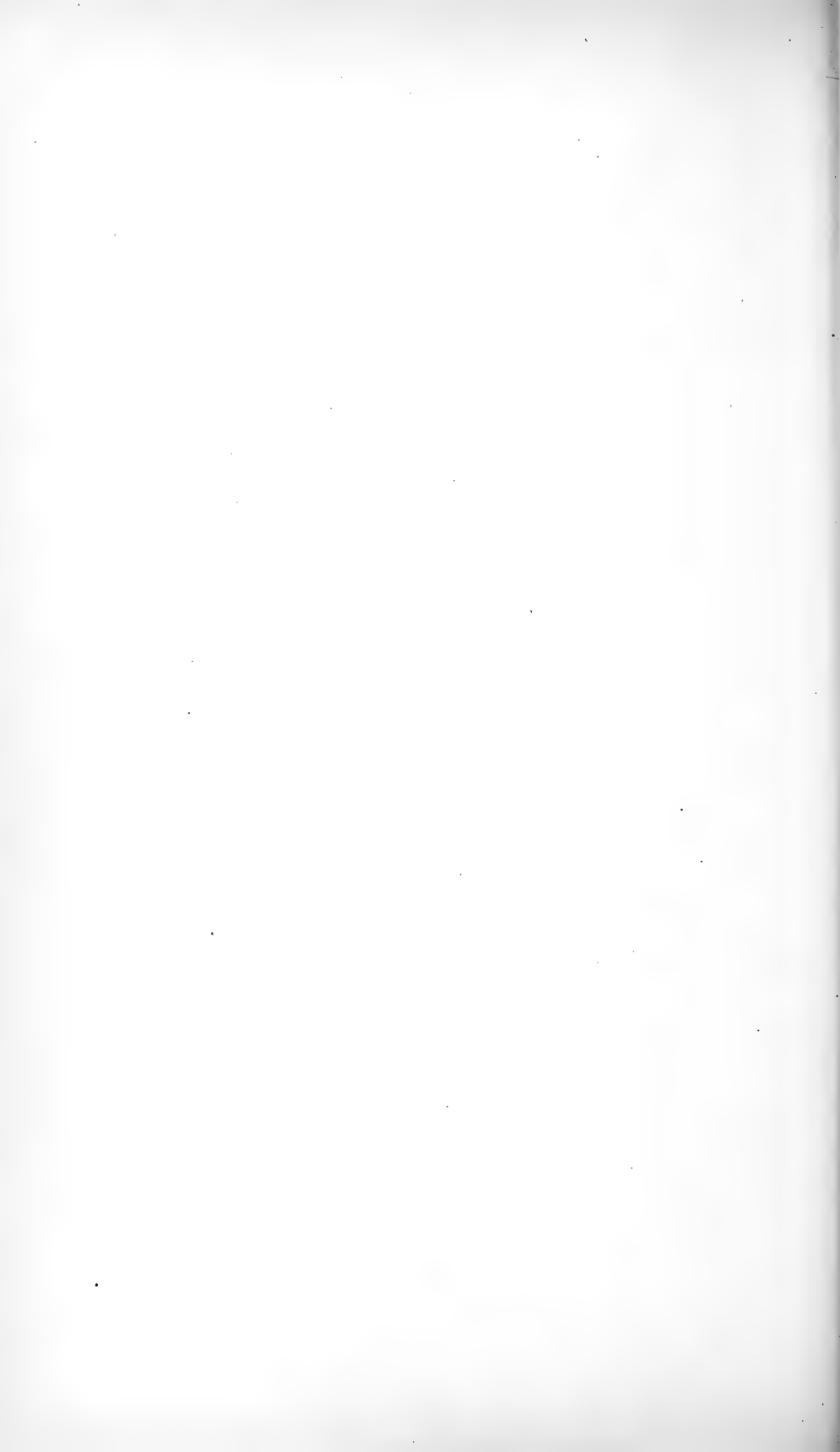
The peduncle is large, somewhat obliquely placed, and has the outer branch inserted along the inner margin. The inner branch does not extend beyond the tip of the abdomen and is concealed by it. The outer branch is also short and does not extend beyond the apical process of the last abdominal segment.

There are seven pairs of ambulatory legs.

Only two specimens of this species were collected by Dr. O. F. Cook at Trece Aguas, Guatemala.

*Type-specimen*.—Cat. No. 40082, U.S.N.M.

The two specimens are very small and so completely rolled up that only a diagrammatic drawing could be made.













14

DESCRIPTION OF A NEW ISOPOD OF THE GENUS  
NOTASELLUS FROM THE EAST COAST  
OF PATAGONIA

BY

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DESCRIPTION OF A NEW ISOPOD OF THE GENUS  
NOTASELLUS FROM THE EAST COAST  
OF PATAGONIA

BY

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Collaborator, Division of Marine Invertebrates, U. S. National Museum

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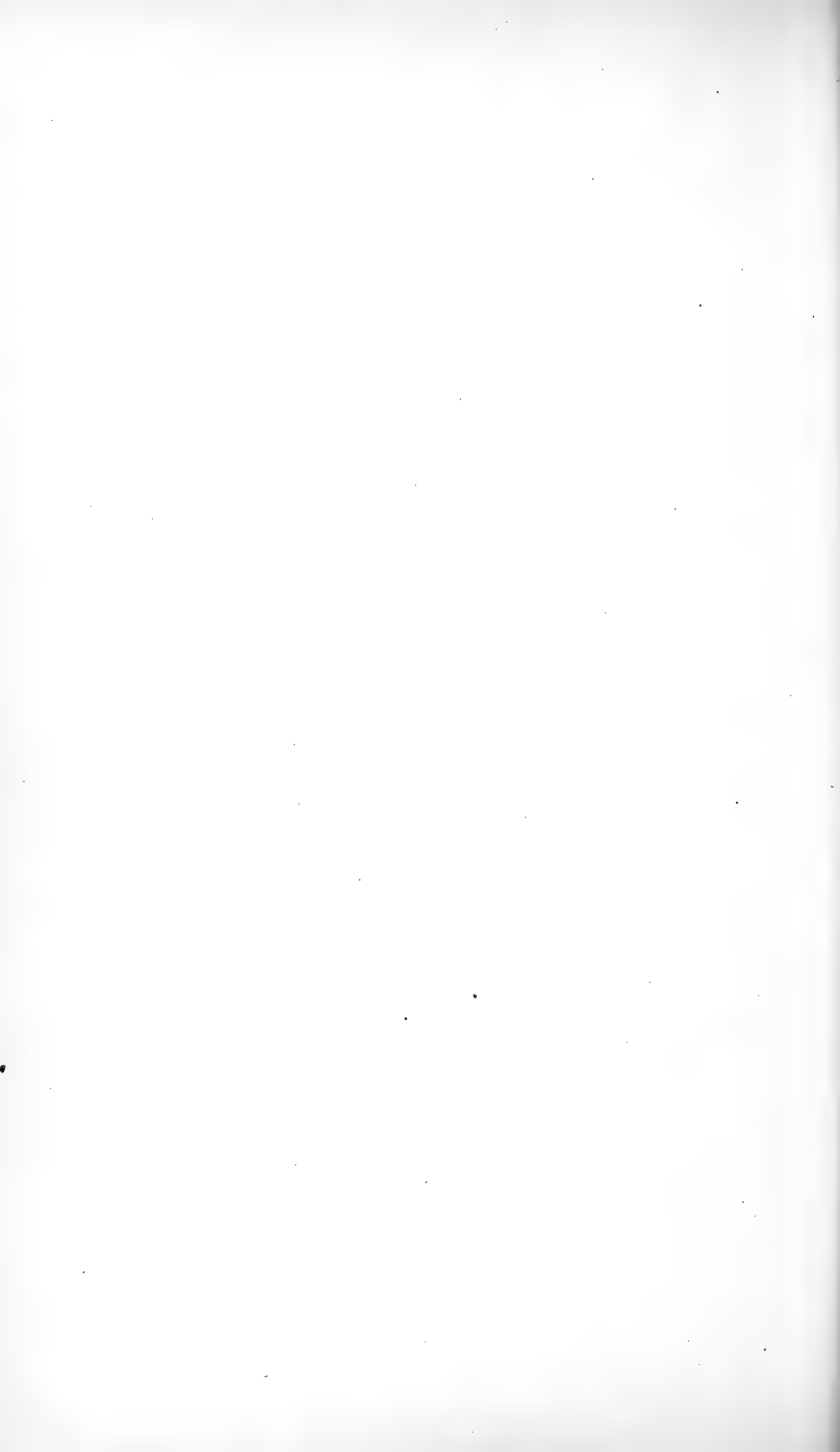
No. 1720.—From the Proceedings of the United States National Museum,  
Vol. 37, pages 649–650

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## DESCRIPTION OF A NEW ISOPOD OF THE GENUS NOTASELLUS FROM THE EAST COAST OF PATAGONIA.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

Two specimens of a new species of *Notasellus* were collected by the U. S. Bureau of Fisheries steamer *Albatross* in 1888 off the east coast of Patagonia. The first species of this genus, *N. sarsii*, from South Georgia, was described by Pfeffer<sup>a</sup> in 1886. In 1902, Dr. T. V. Hodgson<sup>b</sup> described a second species, *N. australis*, from off Cape Adare. In 1905, Stebbing<sup>c</sup> referred *Stenetrium inerme* Haswell to the genus *Notasellus*.

### NOTASELLUS TRILOBATUS, new species.

Body narrow, elongate; surface smooth. Color, in alcohol, yellow. Head wider than long, with the antero-lateral angles rounded, and the front produced in the middle in a long rostrum, rounded at the extremity. The rostrum extends to the end of the third article of the second pair of antennæ. The eyes are rather large, composite, and placed in the post-lateral angles of the head. The first antennæ have the first article of the peduncle dilated; the second article is narrower and shorter; the third is shorter than the second; the flagellum is short, is composed of eleven articles, and extends a little beyond the middle of the fifth article of the peduncle of the second antennæ. The second antennæ have the first four articles short; a scale is articulated to the third article; the fourth article is about one and a half times as long as the first four articles taken together; the sixth article is about one and a half times longer than the fifth; the flagellum is multi-articulate. The first segment of the thorax has the post-lateral angles acutely produced, the antero-lateral angles rounded, and the epimeron, which is bilobate, situated on the lateral margin anterior to the post-lateral angles. The three following segments have both the antero-lateral and post-lateral angles produced in a process, with the margin between them straight and occupied by the bilobate epimeron. The last three segments have only the antero-lateral angles produced, the post-lateral angles being rounded and occupied by the single-lobed epimeron.

<sup>a</sup> Jahrb. Hamburgischen Wiss. Anst., vol. 3, 1886, pp. 125-134, pl. 7, figs. 5-28.

<sup>b</sup> Crust. *Southern Cross* Coll., 1902, pp. 251-253, pl. 36.

<sup>c</sup> Ceylon Pearl Oyster Fisheries, pt. 4, p. 55.

The abdomen is composed of a single segment, the posterior margin of which is trilobate, the median lobe being the largest. The uropoda are missing in both specimens. The seven pairs of legs are similar in the female and terminate in bi-unguiculate dactyli. In the male, however, the first pair of legs is prehensile, with propodus and dactylus dilated, the propodus fringed with long hairs.

Only two specimens, a male and a female, were collected by the U. S. Bureau of Fisheries steamer *Albatross* at station 2770, off the

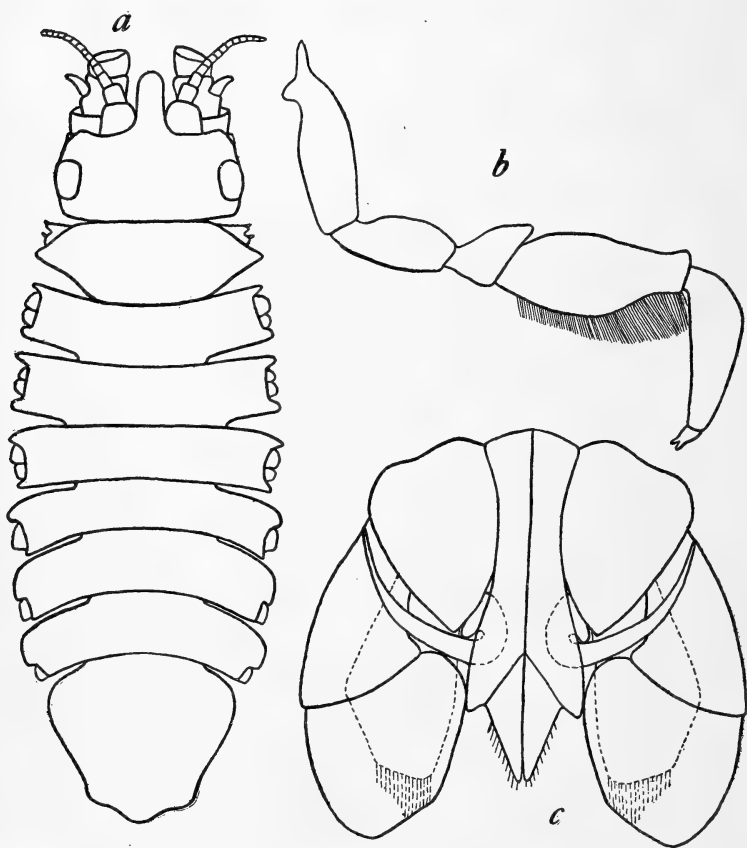
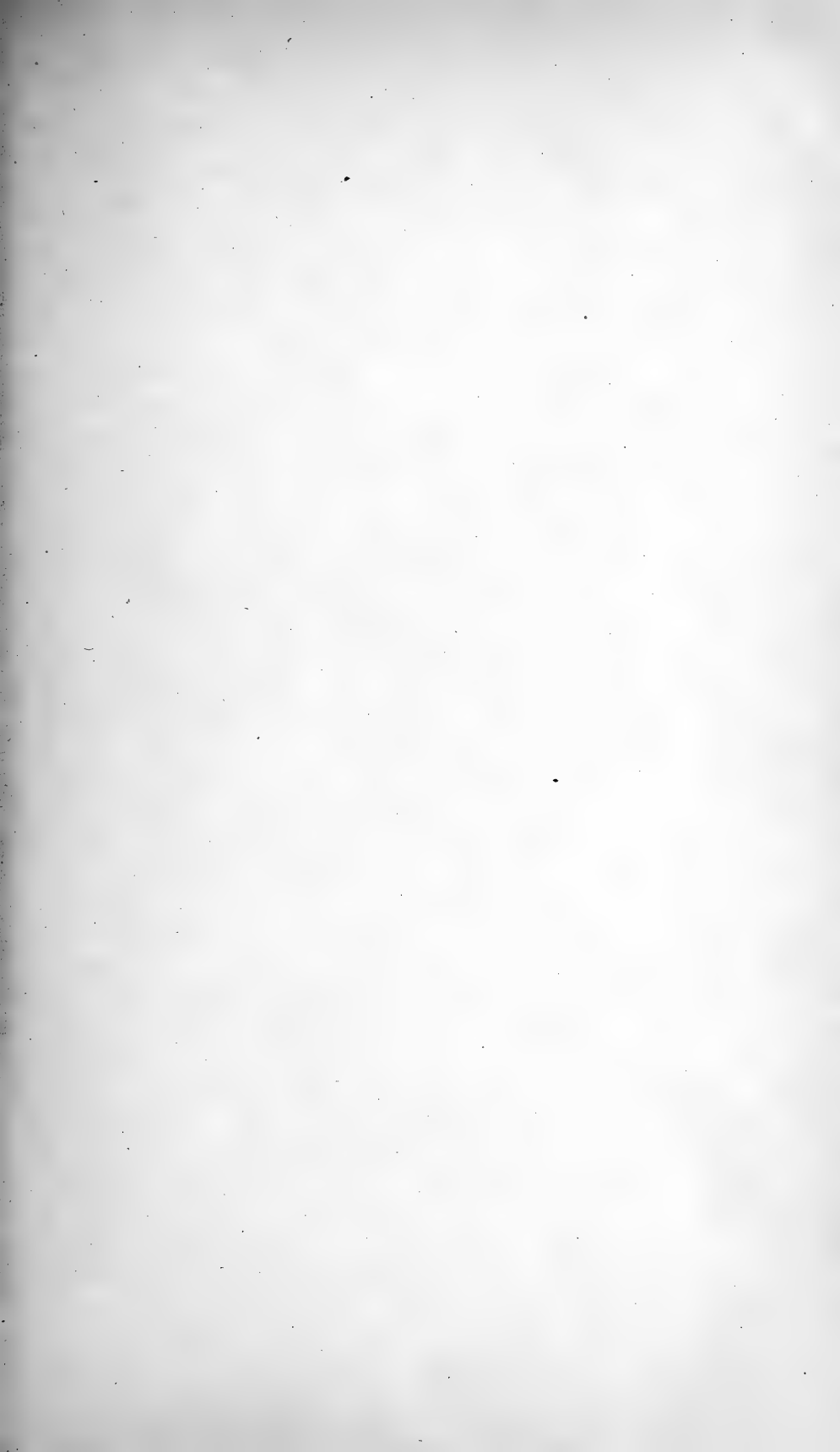


FIG. 1.—*NOTASELLUS TRILOBATUS*. *a*, FEMALE,  $\times 19\frac{1}{2}$ ; *b*, FIRST LEG OF MALE,  $\times 19\frac{1}{2}$ ; *c*, FIRST AND SECOND PLEOPODS OF MALE,  $\times 30\frac{3}{4}$ .

east coast of Patagonia, lat.  $48^{\circ} 37' S.$ , long.  $65^{\circ} 46' W.$ , at a depth of 58 fathoms in gray sand with black specks.

This species is close to the two first-mentioned species of the genus, but differs in the shape of the abdomen, of the first pair of legs of the male and of the distal extremity of the outer branch of the second pleopoda of the male, in the more rounded antero-lateral angles of the head, and the less protruding eyes.

*Type*.—Cat. No. 40099, U.S.N.M.





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# REPORT ON ISOPODS FROM PERU, COL- LECTED BY DR. R. E. COKER

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

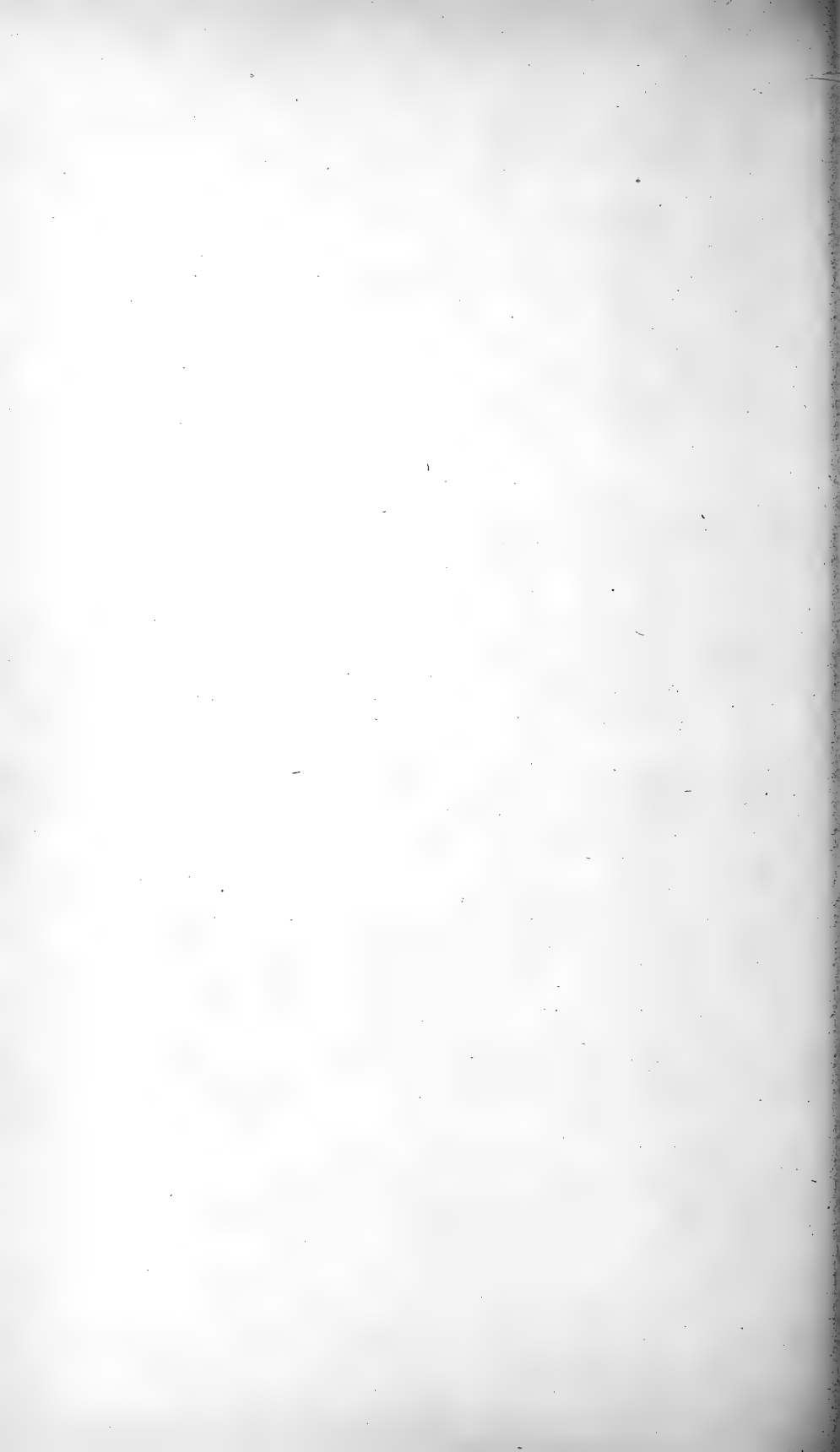
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# REPORT ON ISOPODS FROM PERU, COL- LECTED BY DR. R. E. COKER

BY

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Collaborator, Division of Marine Invertebrates, U. S. National Museum

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# REPORT ON ISOPODS FROM PERU, COLLECTED BY DR. R. E. COKER.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

In a collection of isopods sent by Dr. Robert E. Coker to the U. S. National Museum are three species, two of which are new to science. The third species, *Meinertia gaudichaudii* (Milne Edwards), has previously been recorded from Peruvian shores by Schiøedte and Meinert<sup>a</sup> in 1883. At an earlier date, 1877, Miers,<sup>b</sup> in a paper entitled On a collection of Crustacea, chiefly from South America, described a species of *Anilocra* from Peru, and also recorded *Cymothoa æstrum* as probably occurring there. These are the only marine isopods so far recorded from Peru.

## MEINERTIA GAUDICHAUDII (Milne Edwards).

*Cymothoa gaudichaudii* MILNE EDWARDS, Hist. Nat. Crust., vol. 3, 1840, p. 271.

*Ceratothoa rapax* HELLER, Reise Novara, Crust., 1865, p. 146, fig. 17.

*Ceratothoa gaudichaudii* SCHIØEDTE and MEINERT, Nat. Tidsskr. (3), vol. 13, 1883, p. 335, pl. 13, figs. 11-15.

*Meinertia gaudichaudii* STEBBING, Hist. Crust., 1893, p. 345.—RICHARDSON, Proc. U. S. Nat. Mus., vol. 21, 1899, p. 829; Ann. Mag. Nat. Hist. (7), vol. 4, 1899, p. 171; Proc. Wash. Acad. Sci., vol. 3, 1901, p. 568.—STEBBING, Willey's Zool. Results, 1902, p. 643.

*Locality*.—Mollendo, Peru. From the mouth of a large "Jurel."

*Distribution*.—From Mazatlan, Mexico, to Chile; Galapagos Islands. Also recorded from the Louisiade Archipelago, New Guinea.

*Description*.—Body elongate, nearly three times as long as broad, 16 mm.: 45 mm.

Head nearly twice as wide as long, 4 mm.: 7 mm., somewhat triangular in shape, with apex obtuse. The head is deeply set in the first thoracic segment, the narrow and acute antero-lateral angles of which extend half the length of the head. Eyes small, distinct, irregular in outline, but inclined to be square, and placed at the sides of the head, a little below the middle.

<sup>a</sup> Nat. Tidsskr. (3), vol. 13, 1883, p. 335, pl. 13, figs. 11-15.

<sup>b</sup> Proc. Zool. Soc. London, 1877, p. 671.

The first antennæ are composed of seven articles, the two first ones being almost fused; they extend just below the eye. The second antennæ are composed of nine articles and extend to the posterior margin of the head. The basal articles of the first pair of antennæ are

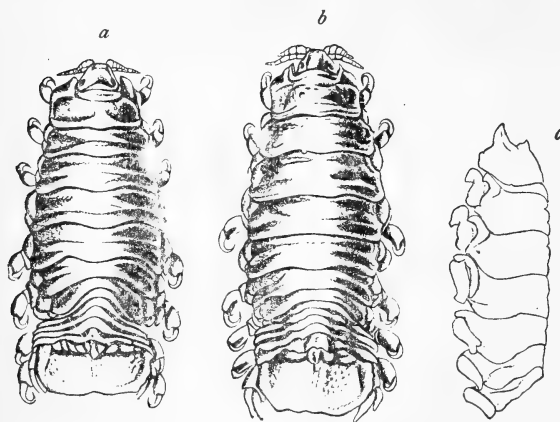


FIG. 1.—*MEINERTIA GAUDICHAUDII* (AFTER SCHIGEDTE AND MEINERT). *a*, ADULT FEMALE. *b*, ADULT FEMALE. *c*, LATERAL VIEW OF THORAX. (ENLARGED.)

adjacent on the ventral side. The articles of both pairs of antennæ are greatly dilated and flattened. The maxillipeds have a palp of two articles. The palp of the mandibles is composed of three articles, the terminal one being very slender and minute. The second maxillæ terminate in two lobes furnished with small hooks.

The first segment of the thorax is longer than any of the others, being 6 mm. in length; the second and fifth segments are subequal, each being 4 mm. long; the third and fourth are each 5 mm. in length; the sixth segment is 3 mm. long; the seventh is 2 mm. long. The antero-lateral angles of the first segment are narrow and acute and are produced forward to about the middle of the head. The epimera are distinctly separated on all the six following segments. They are narrow, elongated plates, not extending quite to the posterior margin of the segments.

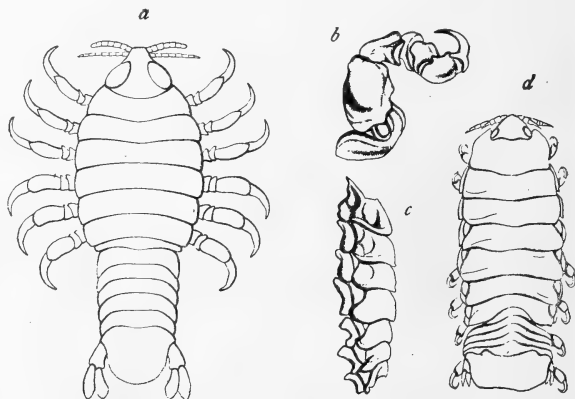


FIG. 2.—*MEINERTIA GAUDICHAUDII* (AFTER SCHIGEDTE AND MEINERT). *a*, YOUNG OF FIRST STAGE. *b*, SECOND LEG OF ADULT MALE. *c*, LATERAL VIEW OF THORAX OF ADULT MALE. *d*, ADULT MALE. (ENLARGED.)

The abdomen is deeply set in the thorax. The first segment has the sides covered by the last thoracic segment. The four following segments are as wide as the seventh thoracic segment or wider. The sixth or terminal segment is trapezoidal, almost twice as wide as

long, 7 mm. by 13 mm. The post-lateral angles are rounded and the posterior margin straight. The uropoda are a little longer than the terminal abdominal segment. The inner branch is slightly longer than the outer branch. Both are narrow, elongate, and produced to acute and tapering extremities.

The legs are all prehensile, and terminate in short, stout dactyli. There is a high carina on the basis of the last four pairs of legs, the carina increasing in height from the fourth to the seventh pair, where it is extremely high.<sup>a</sup>

**SPHÆROMA PERUVIANUM, new species.**

Body oblong-ovate, covered with small granules, which on the abdomen become much more numerous and larger, more like tubercles.

Head large, wider than long, with the front produced in a small median point. Two small tubercles are situated close to the anterior margin, one on either side of the median line.

The eyes are placed in the post-lateral angles and are large and composite. The first antennæ have the first article twice as long as wide; the second article is half as long as the first; the third is slender and is about as long as the first two taken together; the flagellum is composed of eleven articles and extends to the middle of the lateral margin of the first thoracic segment. The second antennæ, with a flagellum of nineteen articles, extend to the posterior margin of the second thoracic segment. The first maxilla has the inner lobe furnished with four plumose processes, the outer lobe with thirteen spines, eight long and five short ones. The mandible has the apical tooth trifid.

The segments of the thorax, with the exception of the first, have a transverse tuberculated ridge. The seventh segment is furnished with four large tubercles in a transverse line, two on either side of the median line. The lateral parts of all the segments are produced in narrow triangular lobes, with rounded extremities.

The first segment of the abdomen has two large tubercles, one on either side of the median line, and two smaller ones on either side of these, making six in a transverse row. The terminal segment is broadly rounded posteriorly, with the apex slightly truncate. On the anterior portion are six prominent tubercles, four in a transverse

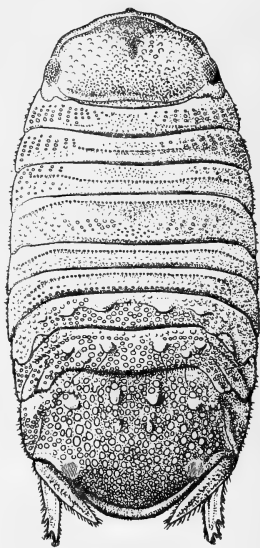


FIG. 3.—SPHÆROMA PERUVIANUM.  
× 5½. (Drawn by Miss V. Dan-  
dridge.)

<sup>a</sup> For description of the male, female, and young of the first stage, see Schiøedte and Meinert, Nat. Tidsskr. (3), vol. 13, 1883, p. 335.

line, two on either side of the median line and two below this transverse row, one on either side of the median line. Close to the lateral margin on either side, and just below the middle of the segment, there is a thick bunch of hairs. The inner branch of the uropoda is pointed at the extremity and extends but little beyond the abdomen. The outer

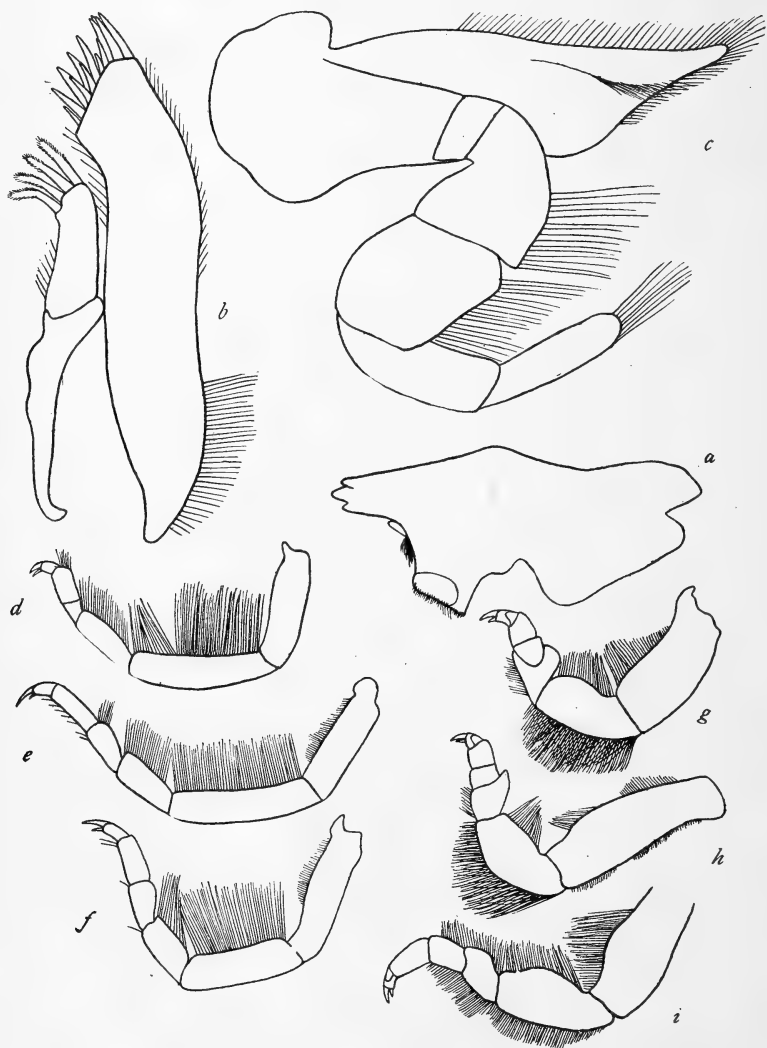


FIG. 4.—*SPHIEROMA PERUVIANUM*. *a*, MANDIBLE.  $\times 23$ . *b*, FIRST MAXILLA.  $\times 41$ . *c*, MAXILLIPED.  $\times 41$ . *d*, FIRST LEG. *e*, SECOND LEG. *f*, THIRD LEG. *g*, FOURTH LEG. *h*, FIFTH LEG. *i*, SIXTH LEG.  $\times 14\frac{1}{2}$ .

branch has two teeth on the outer margin, with only a feeble indication of a third. This branch is about as long as the inner branch and is also pointed at the extremity. The first three pairs of legs are long and slender, the last four short and stout. All are covered with long hairs.

A large number of specimens were collected in the oyster beds of Matapalo (near Capon), Peru. They were found in wood, in holes bored by them. The wood was completely honeycombed.

The following notes were supplied by Doctor Coker: "These small crustacea are economically significant, since they enter the green stems and roots of the mangroves, causing the wood to decay. The falling away of these destroyed branches and roots causes the loss of the many oysters attached to them. As I rarely observed the *Teredo* in the green stems, it seems that these crustacea are the most pernicious form and undoubtedly they prepare the way for the more rapidly destructive *Teredo*. (A nest of young included.) 'Piojos de Mangle' (Mangrove louse). Fishermen attribute to these the destruction of oysters that is really accomplished by the drill."

This species differs from the other wood-boring forms of this genus in the smaller number of teeth on the outer branch of the uropoda, in the shape of the terminal segment, in the difference in the arrangement of the tubercles, in the presence of a bunch of hairs on either side of the terminal segment, in the trifold apical tooth of the mandibles, in having four plumose processes on the inner lobe of the first maxillæ and thirteen on the outer lobe, and in the difference in the shape of the maxillipeds.

*Type-specimen*.—Cat. No. 40333, U.S.N.M.

#### ORBIMORPHUS, new genus.

Body of adult female, ovate.

Head large, with a narrow frontal border.

Lateral bosses present on the first four segments of the thorax. Lateral to these are the epimera, which extend the entire length of the lateral margin. Epimera are present on all the segments of the thorax and on the first four segments of the abdomen, but are not greatly developed. There are four pairs of double-branched pleopods, and a pair of double-branched uropoda.

The male has all the segments of the thorax distinct. Those of the abdomen are fused, but at the base of the abdominal segment is a notch on either side indicating a fused first segment. There are no uropods or pleopods.

*Type of the genus*.—*Orbimorphus constrictus*, new species.

This genus is very close to *Orbione* Bonnier but differs in having the pleural lamellæ or epimera of the thorax and abdomen of the female not so enormously developed. The male <sup>a</sup> also differs in having the first segment of the abdomen indicated by a notch on either side of the terminal segment.

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<sup>a</sup> The male of *Orbione* Bonnier has not been described or figured, but I hope soon to give a figure of this form from a specimen of *O. penei* collected recently by the Bureau of Fisheries steamer *Albatross*.

## ORBIMORPHUS CONSTRICTUS, new species.

Body of adult female ovate, somewhat irregular in outline.

Head large, and with a narrow frontal border. Eyes absent. First pair of antennæ small, composed of three articles, the terminal one being minute. Second pair of antennæ concealed by the mouth parts.

The seven segments of the thorax are distinct. Lateral bosses are present on the first four. Lateral to these are the epimeral plates, which extend the entire length of the lateral margin, and which are

larger on one side of the body than on the other. The epimera of the last three segments are also well developed.

The abdomen is composed of five segments, the fifth or terminal segment being small and not provided with pleural plates as are the first four segments. The segments of the abdomen are rather indistinctly defined in the middle of the dorsal region. There are four pairs of double-branched pleopods, the lamellæ being leaf-like. The uropods are a pair of double-branched oval lamellæ, a little shorter than the branches of the pleopods, all of which encircle the abdomen, and project beyond the pleural plates of the abdominal segments. There

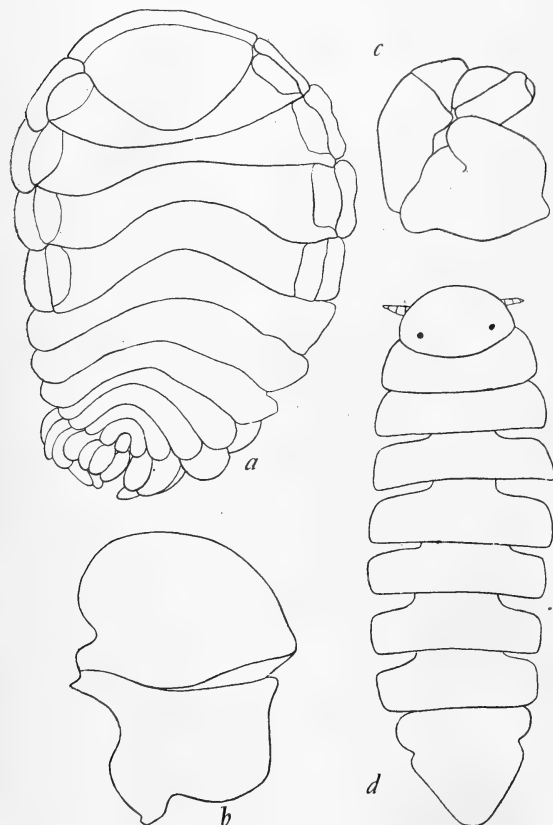


FIG. 5.—ORBIMORPHUS CONSTRICTUS. *a*, ADULT FEMALE.  $\times 14\frac{1}{2}$ . *b*, FIRST LAMELLA OF MARSUPIUM.  $\times 23$ . *c*, SEVENTH LEG OF FEMALE.  $\times 41$ . *d*, MALE.  $\times 41$ .

are seven pairs of prehensile legs, all furnished with a high rounded carina on the basis. There are five pairs of incubatory plates, the first pair having the distal half produced in a small lobe.

The male is narrowly elongate. The head is large, transversely oval. Eyes are small and distinct. All seven segments of the thorax are distinctly defined, with lateral margins not contiguous, but separated by a small indentation. The segments of the abdomen are all united to form a single tapering segment, with posterior extremity

rounded. Near the base on either side is a small notch probably indicating the first fused segment. There are no pleopods or uropods.

One male and one female were collected at Matapalo (near Capon), Peru. They were taken from the branchial cavity of *Petrolisthes armatus* (Gibbes) which was found in oyster beds.

*Type-specimen*.—Cat. No. 40133, U.S.N.M.

#### ADDITIONAL ISOPODS KNOWN FROM PERU.

##### ANILOCRA LÆVIS Miers.

*Anilocra lævis* MIERS, Proc. Zool. Soc. London, 1877, p. 672, pl. 68, fig. 6.

*Localities*.—Martinique; Peru.

##### CYMOTHOA ŒSTRUM (Linnæus).

(?) *Oniscus œstrum* LINNÆUS, Syst. Nat., 12th ed., 1766, p. 1059.—FABRICIUS, Syst. Ent., 1775, p. 294.

*Cymothoa œstrum* FABRICIUS, Syst. Ent., vol. 2, 1793, p. 505.—LEACH, Trans. Linn. Soc., vol. 11, 1815, p. 372.—DESMAREST, Cons. Gén. Crust., 1825, p. 309, pl. 47, figs. 6, 7.—MILNE EDWARDS, Hist. Nat. Crust., vol. 3, 1840, p. 269; Règne Anim. Cuvier (éd. Crochard), Crust., pl. 45, fig. 1.—SPENCE BATE and WESTWOOD, Hist. Brit. Sessile-eyed Crust., 1868, vol. 2, p. 274, footnote.—MIERS, Proc. Zool. Soc. London, 1877, p. 671.—SCHIEDTE and MEINERT, Nat. Tidsskr. (3), vol. 14, 1883, p. 271, pl. 8, figs. 5-6.

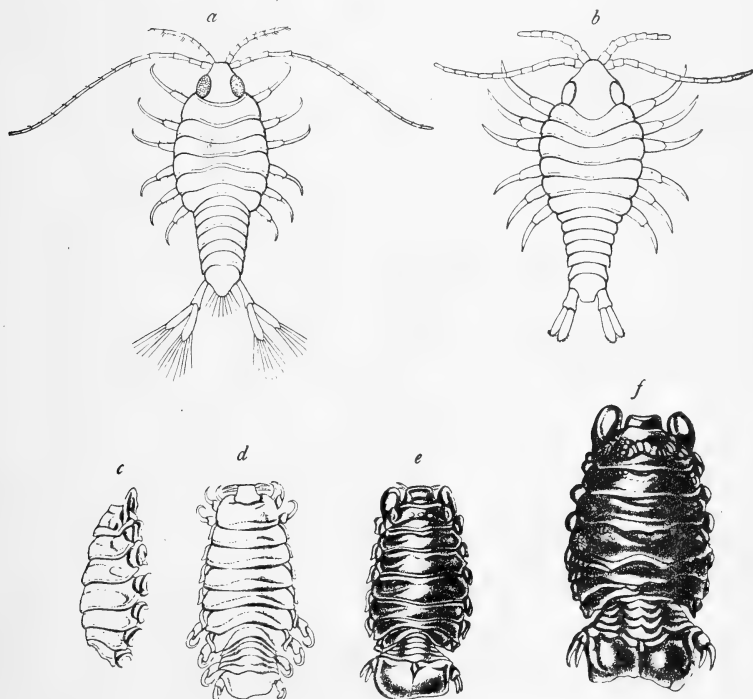
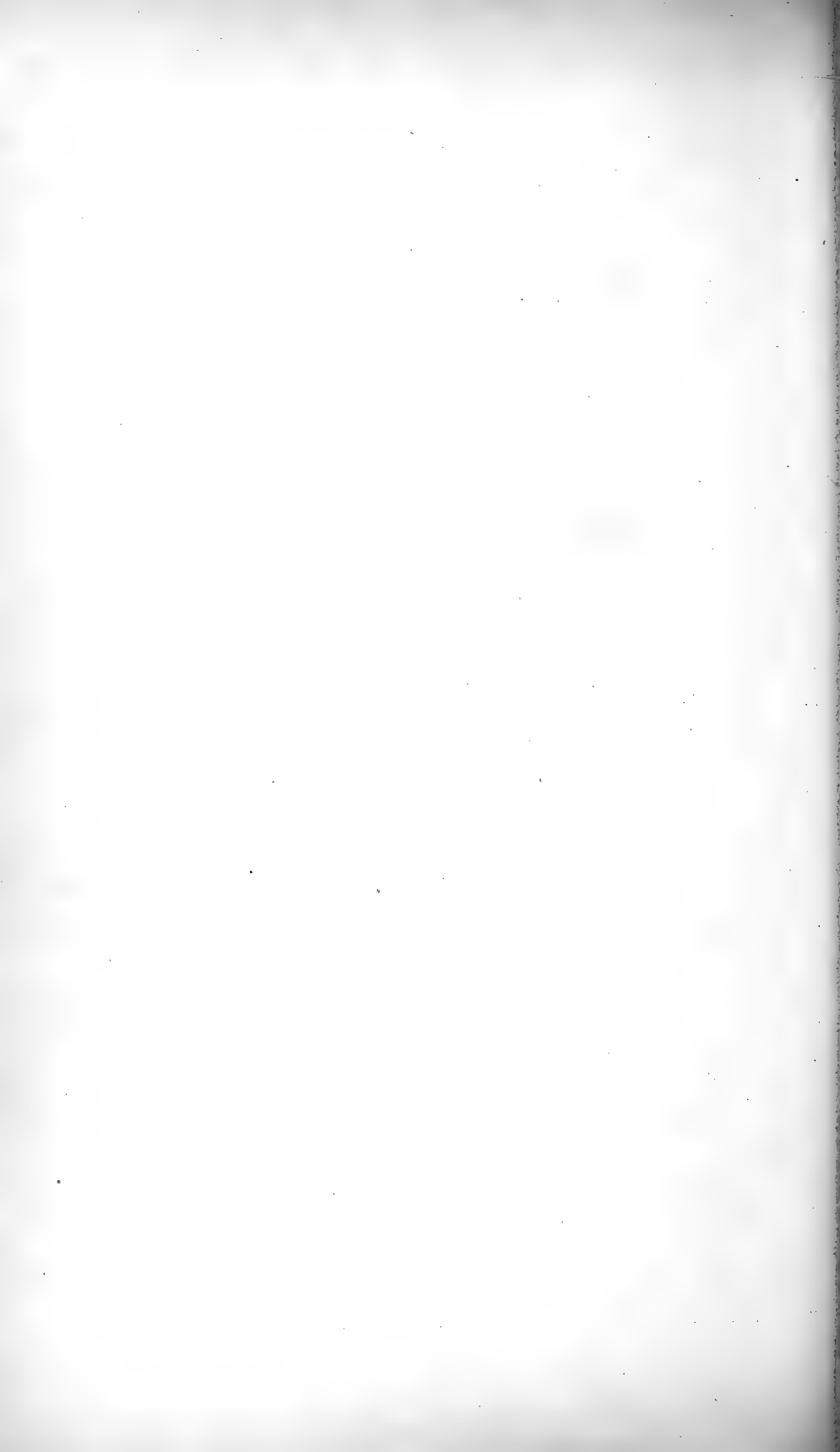


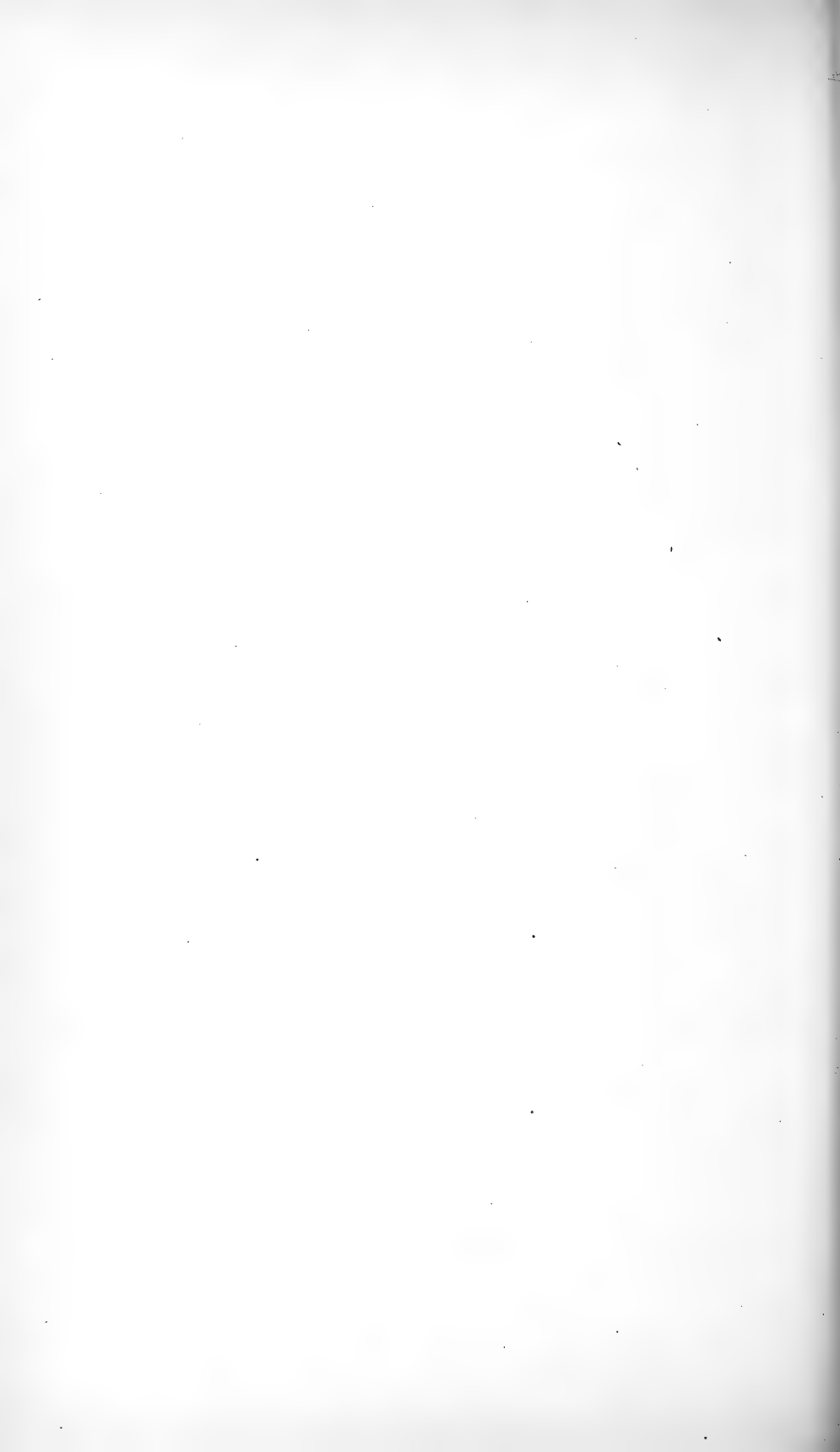
FIG. 6.—CYMOTHOA ŒSTRUM (AFTER SCHIEDTE AND MEINERT). *a*, YOUNG OF THE SECOND STAGE (ENLARGED). *b*, YOUNG OF THE FIRST STAGE (ENLARGED). *c*, LATERAL VIEW OF THORAX OF ADULT FEMALE (REDUCED). *d*, ADULT MALE (ENLARGED). *e*, ADULT FEMALE (REDUCED). *f*, ADULT FEMALE (REDUCED).

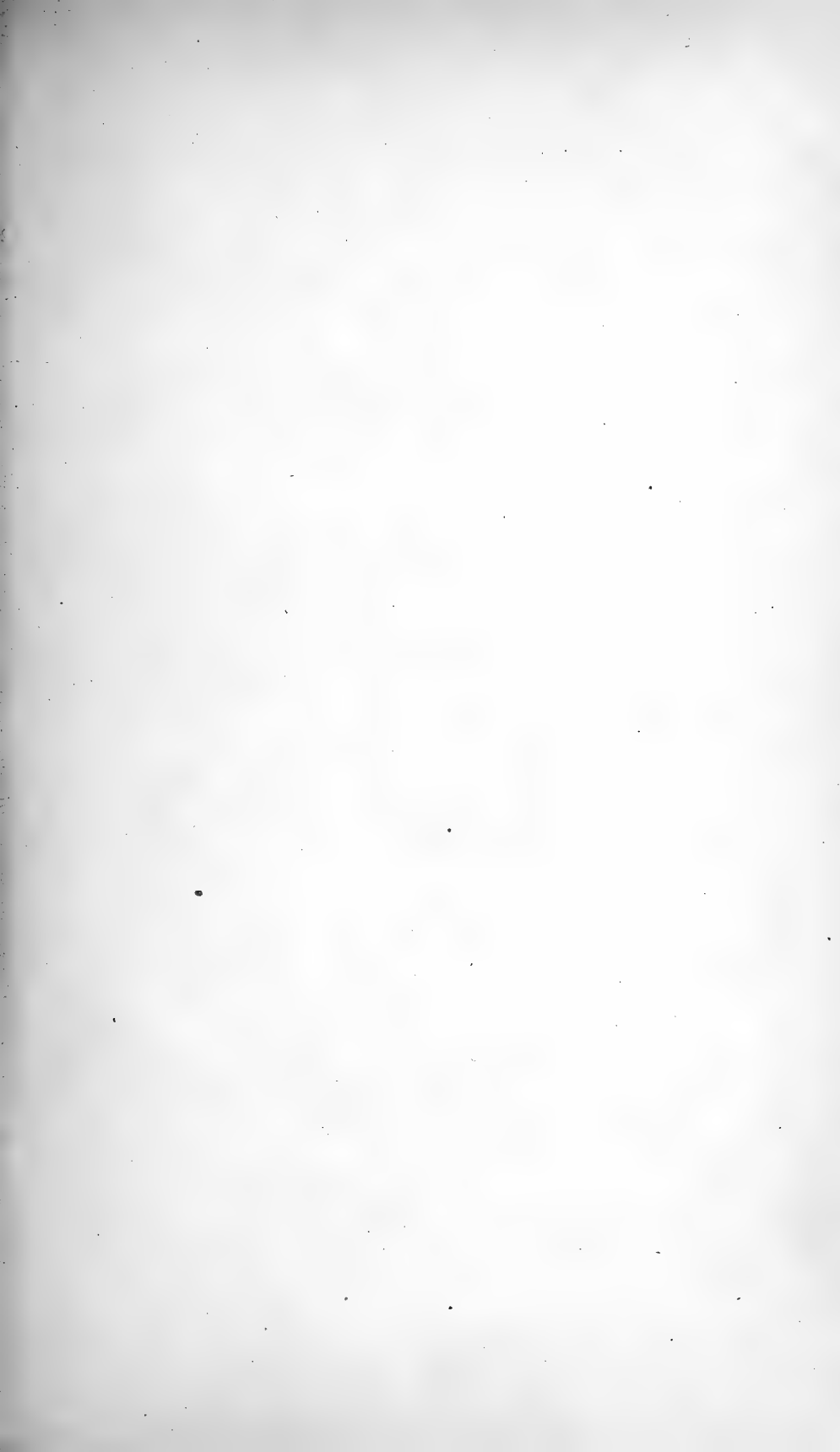
*Localities*.—Virginia, southward throughout the Gulf of Mexico and Caribbean Sea; Peru (according to Miers). Parasitic on fish.













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# DESCRIPTION OF A NEW PARASITIC ISOPOD FROM THE HAWAIIAN ISLANDS

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

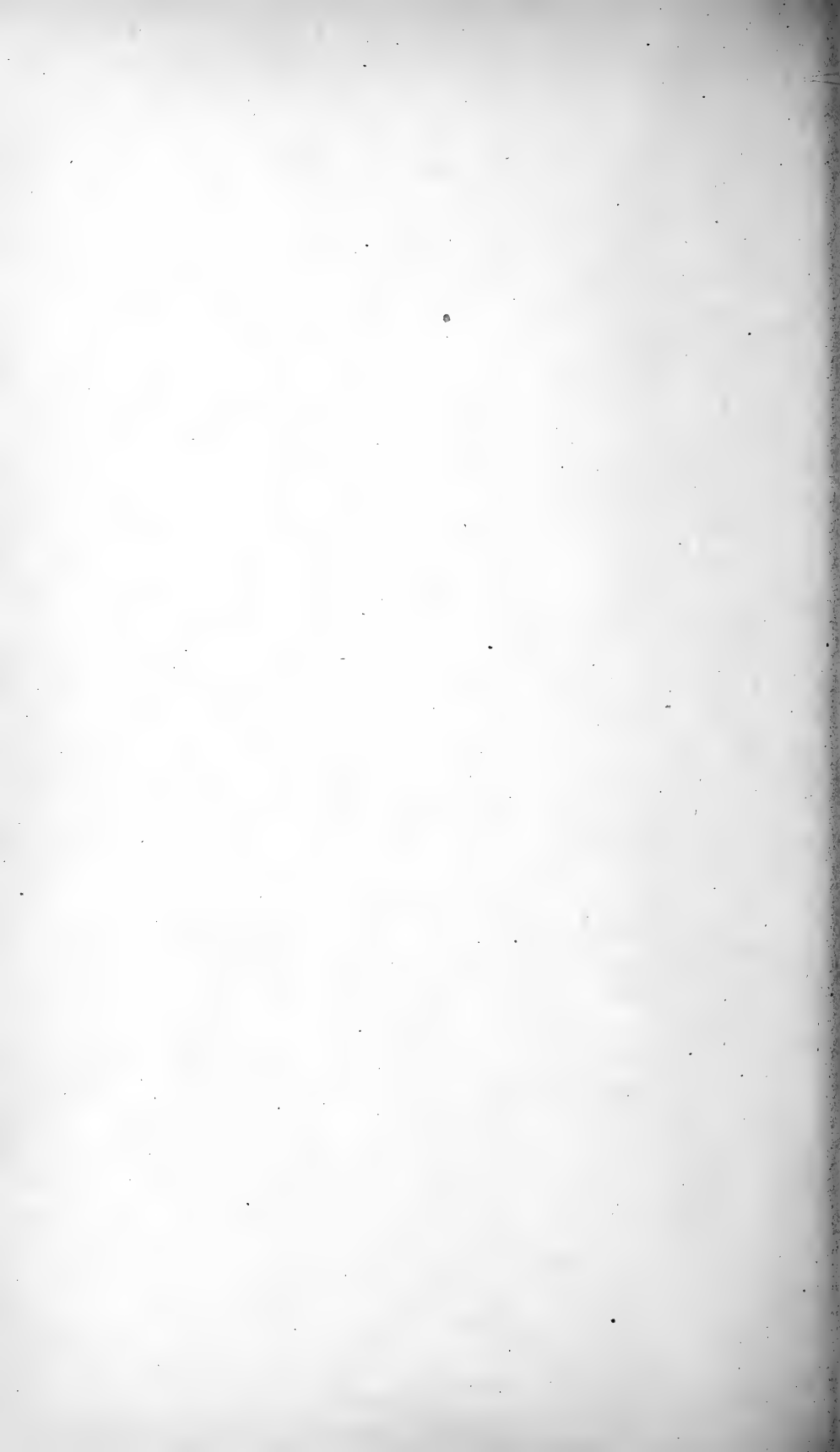
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# DESCRIPTION OF A NEW PARASITIC ISOPOD FROM THE HAWAIIAN ISLANDS

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Collaborator, Division of Marine Invertebrates, U. S. National Museum

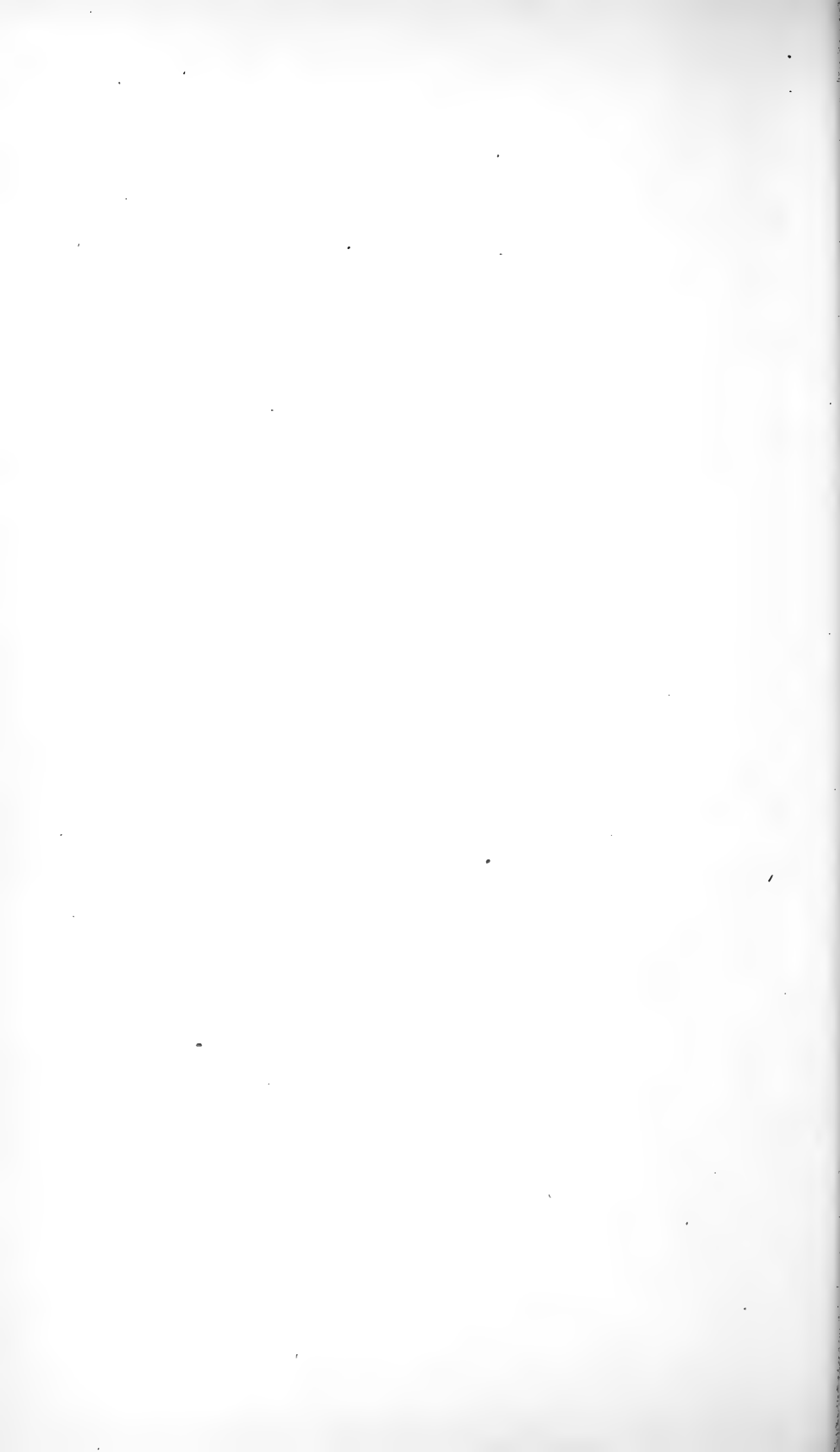
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# DESCRIPTION OF A NEW PARASITIC ISOPOD FROM THE HAWAIIAN ISLANDS.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

The isopod, which is herein described, was collected by the U. S. Bureau of Fisheries steamer *Albatross* among the Hawaiian Islands in 1902. This species was not included in my earlier report,<sup>a</sup> because additional material was sent in after that report was published.

## SCYRACEPON HAWAIIENSIS, new species.

Body of adult female oval in outline, somewhat asymmetrical. Color uniformly light yellow.

Head very large, bilobed, and provided with a wide marginal border on the anterior half. Eyes wanting. Both pairs of antennæ

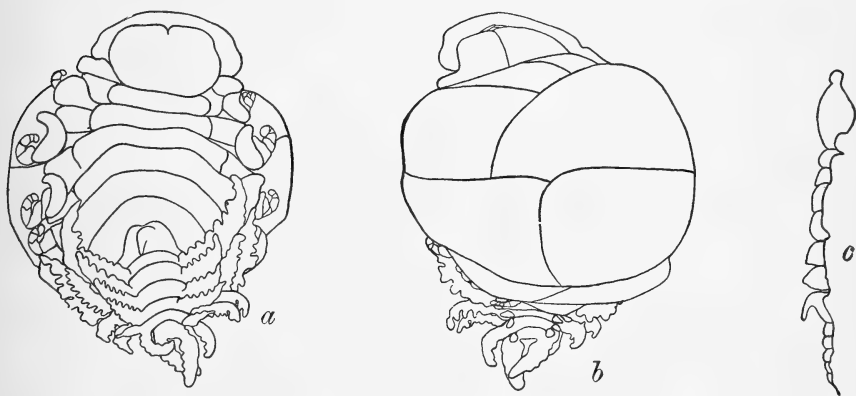


FIG. 1.—SCYRACEPON HAWAIIENSIS, FEMALE. *a*, DORSAL VIEW. *b*, VENTRAL VIEW. *c*, LATERAL VIEW OF THORAX.

small and inconspicuous; first pair composed of two joints; second pair composed of four joints. Maxillipeds very large with the exopodite produced at the inner distal extremity into a long lamella-like process with many smaller lamellæ along its inner margin. The lamella-like process of one side overlaps that of the other maxil-

<sup>a</sup> Bull. U. S. Fish Commission, vol. 23, pt. 3, 1906, pp. 819-826.

lipid on the ventral side of the frontal border of the head; the endopodite is triangular.

All seven thoracic segments are distinct and subequal in length. There is a tendency in all except the first (most marked in the last four) to be produced into a dorsal median boss. This boss is most conspicuous in the seventh segment and takes the form of a strong hook-shaped prominence. The epimera of the first four segments are conspicuous on the anterior portion of the lateral margins. Ovarian bosses are present on the first four segments. The lateral margins of the last three segments are concealed by the overlapping elongated, anteriorly directed "lames pleurales" of the abdominal segments.

The six abdominal segments are distinctly separated on the dorsal side. Each of the first five segments is provided on either side with two elongate, fringed appendages and a small sac-like body on the ventral side at the base of the inferior appendage. The superior elongate appendage on either side of each segment is the "lame pleurale" of the segment, and these decrease in size from the first to the fifth segment, the first being extremely long, the fifth quite small. The inferior elongated branches are the outer branches of the pleopoda and resemble the "lames pleurales." They also decrease in size from the first to the fifth segments. The inner branches of the pleopoda are five pairs of small sac-like bodies, a pair for each segment on the ventral side of the body, inconspicuous, forming two converging longitudinal rows.

The uropoda are a pair of elongated appendages attached to the sixth abdominal segment and resembling the "lames pleurales" and the outer branches of the pleopoda.



FIG. 4.—SCYRRACEPON HAWAIIENSIS. FIRST LAMELLA OF MARSUPIUM.

There are seven pairs of small, feeble, prehensile legs. There are five pairs of incubatory plates which overlap in the middle of the ventral side, completely inclosing the incubatory pouch. The distal segment of the first pair is somewhat produced at the inner posterior

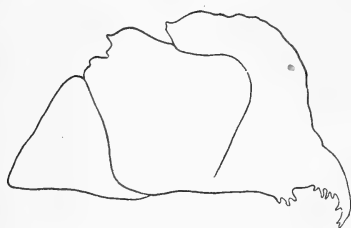


FIG. 2.—SCYRRACEPON HAWAIIENSIS. MAXILLIPED.



FIG. 3.—SCYRRACEPON HAWAIIENSIS. MANDIBLE.

angle and has the posterior margin drawn out in small lamellæ. The last pair is tuberculate at the base.

The male has all the segments of the thorax defined and distinctly separate. Each is provided with a median ventral boss. The head is small and rounded and provided with eyes. The first pair of antennæ are composed of two articles; the second pair are composed of four articles. The segments of the abdomen are fused in the middle of the dorsal surface, but are indicated laterally by five incisions on either side, the last incision being very slight. The pleopods and uropods are rudimentary.

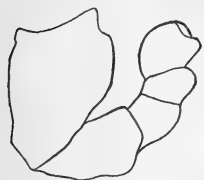


FIG. 5.—SCYRACEPON HAWAIIENSIS. SECOND LEG OF FEMALE.

Two specimens, a male and a female, were collected by the U. S. Bureau of Fisheries steamer *Albatross*, at station 3884, Pailolo Channel, between Maui and Molokai islands, Territory of Hawaii, at a depth of 277 to 284 fathoms in globigerina ooze. They were parasitic on *Pilumnoplax cooki* Rathbun, having been found in the branchial cavity.

*Type*.—Cat. No. 40897, U.S.N.M.

Only one species of the genus has been previously described, the type, *Scyracepon tuberculosa* Tattersall,<sup>a</sup> parasitic on *Scyramathia carpenteri* Norman, and found at Tearaght, County Kerry, Ireland.

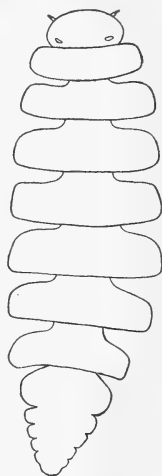
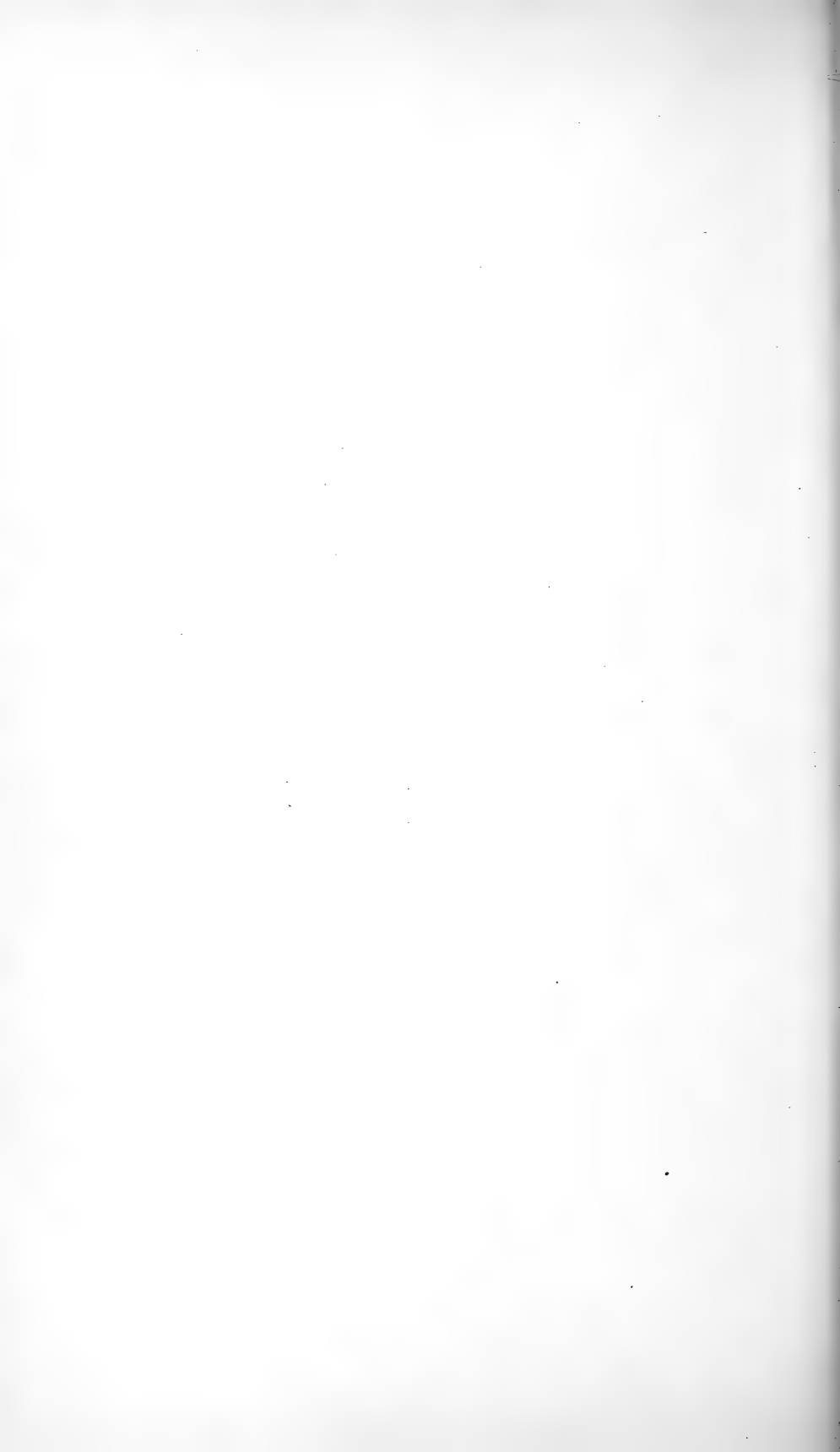


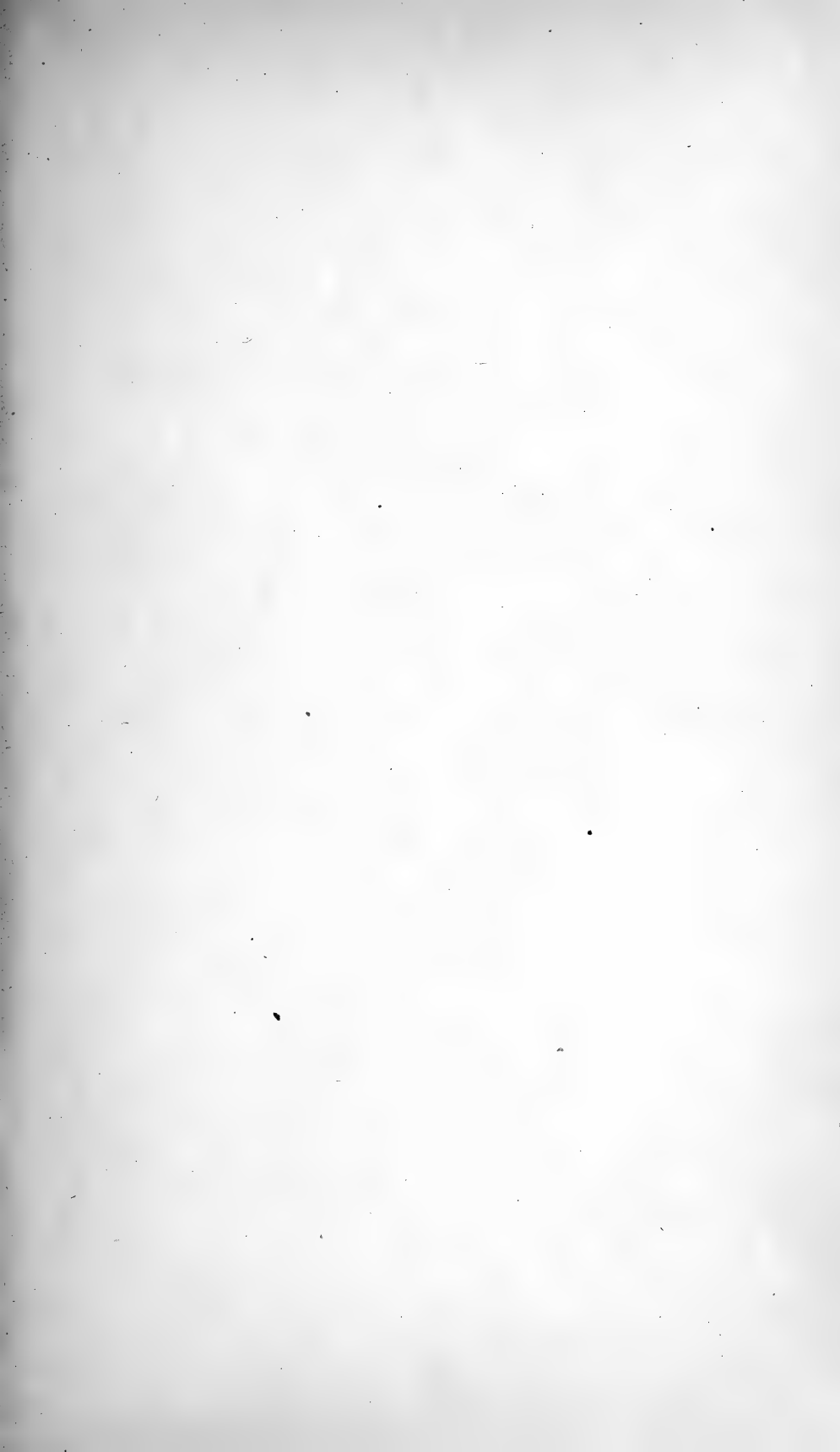
FIG. 6.—SCYRACEPON HAWAIIENSIS. MALE.

<sup>a</sup> Fisheries, Ireland, Sci. Invest., 1904, vol. 2 [1905], pp. 36-37, pl. 11, figs. 9-12; p. 78.













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TERRESTRIAL ISOPODS COLLECTED IN COSTA  
RICA BY J. F. TRISTAN, WITH DESCRIPTIONS  
OF A NEW GENUS AND SPECIES

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

No. 1775.—From the Proceedings of the United States National Museum,  
Vol. 39, pages 93-95

Published October 25, 1910



Washington  
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1910



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J. F. TRISTAN, WITH DESCRIPTIONS OF A NEW GENUS  
AND SPECIES.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

Among some isopods recently sent to the U. S. National Museum from Costa Rica by Prof. J. F. Tristan were twelve specimens representing a species belonging to a new genus of Armadillididæ. Two previously known species were also found.

COXOPODIAS, new genus. \*

Body oval, convex.

Eyes distinct, composite.

Second antennæ with a flagellum composed of two articles, the second being twice as long as the first.

Coxopodite of first thoracic segment extending the entire length of the lateral margin, cleft posteriorly, and separated from the segment by a longitudinal furrow; there is also a slight furrow on the dorsal surface of the segment close to the lateral margin. Coxopodites are present on the second and third segments of the thorax on the underside in the form of small, but conspicuous tooth-like processes.

Terminal abdominal segment triangular, with the apex acutely produced. Basal article of the uropoda large, obliquely quadrangular; inner branch about as long as the basal article; outer branch minute, inserted about the middle of the dorsal surface of the basal article.

This genus is close to *Ethelum* Budde-Lund, but differs in the possession of distinct coxopodites on the second and third thoracic segments, in the position of the outer branch of the uropoda, and in the possession of only two plumose processes on the inner lobe of the first maxillæ.

*Genotype*.—*Coxopodias tristani*, new species.

*See Oliver - Cooper, 1926, for illustration.*

## COXOPODIAS TRISTANI, new species.

Body ovate, very convex, capable of being rolled up into a ball. Color reddish brown, with a lateral band of light wavy lines on either side of the body; surface smooth.

Head wider than long, with the eyes small, round, composite, situated close to the lateral margin; anterior margin straight, the antero-lateral angles acute; front not margined.

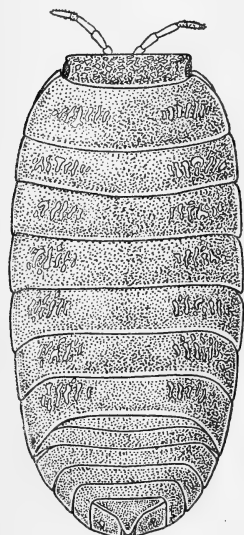


FIG. 1.—COXOPODIAS TRISTANI.

First antennæ rudimentary and inconspicuous; second antennæ with the first article short, the second twice as long as the first, the third about equal in length to the second, the fourth a little longer than the third, the fifth a little longer than the fourth; flagellum composed of two articles, the first of which is about half as long as the second.

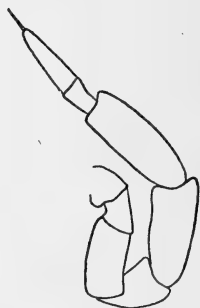


FIG. 2.—COXOPODIAS TRISTANI. SECOND ANTENNA.

First segment of the thorax the longest, about twice as long as the head. The epimeron or coxopodite extends the entire length of the lateral margin, separated from the segment by a longitudinal furrow; it is cleft posteriorly. There is also a slight furrow on the dorsal side of the segment, close to the lateral margin. The second and third segments of the thorax are also furnished, on the underside, with small but conspicuous



FIG. 3.—COXOPODIAS TRISTANI. FIRST THREE SEGMENTS OF THORAX (UNDER-SIDE).

ous coxopodites in the form of tooth-like processes.

First five segments of the abdomen short and subequal (the first slightly shorter than the others); lateral parts of the first two covered by the seventh thoracic segment. The abdominal segments complete the oval outline of the body. Sixth or terminal segment triangular with the apex produced in an acute process. Basal article of the uropoda obliquely quadrangular, occupying all the space between the sixth abdominal segment and the lateral parts of the fifth segment; the inner posterior angle extends a little beyond the apical process of the terminal abdominal segment. Inner branch of the



FIG. 4.—COXOPODIAS TRISTANI. FIRST MAXILLA. a, INNER LOBE; b, OUTER LOBE.

uropoda extends to the tip of the inner postero-lateral angle of the basal article; outer branch minute, situated about the middle of the dorsal surface of the basal article.

Twelve specimens of this species were collected by Prof. J. F. Tristan. The type was found on the road between Juan Viñas and Reventazon. The other specimens came from Turrialba.

*Type*.—Cat. No. 40896, U.S.N.M.

Named for the collector.

**PHILOSCIA MUSCORUM (Scopoli).**

*Oniscus muscorum* SCOPOLI, Entomologia Carniolica, 1763, p. 415.

*Philoscia muscorum* LATREILLE, Hist. Nat. Crust. Ins., vol. 7, 1804, p. 43; Gen. Crust. Ins., vol. 1, 1806, p. 69.—BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 207–209. (See Budde-Lund for further synonymy).—G. O. SARS, Crust. Norway, vol. 2, 1899, pp. 173–174, pl. 76, fig. 1.

*Localities*.—Santa Maria Dota; road between Juan Viñas and Reventazon, Costa Rica.

*Distribution*.—Denmark, Germany, Holland, Poland, Austria, Great Britain, France, Spain, Italy, Algeria, and Woods Hole, Massachusetts, U. S. A.

**METOPONORTHUS PRUINOSUS (Brandt).**

*Porcellio pruinus* BRANDT, Bull. Soc. Imp. Naturalistes de Moscou, vol. 6, 1833, p. 19.

*Metoponorthus pruinus* BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 169–171. (See Budde-Lund for further synonymy).—G. O. SARS, Crust. Norway, vol. 2, 1899, pp. 184–185, pl. 80, fig. 2.

*Locality*.—Turrubales, Costa Rica.

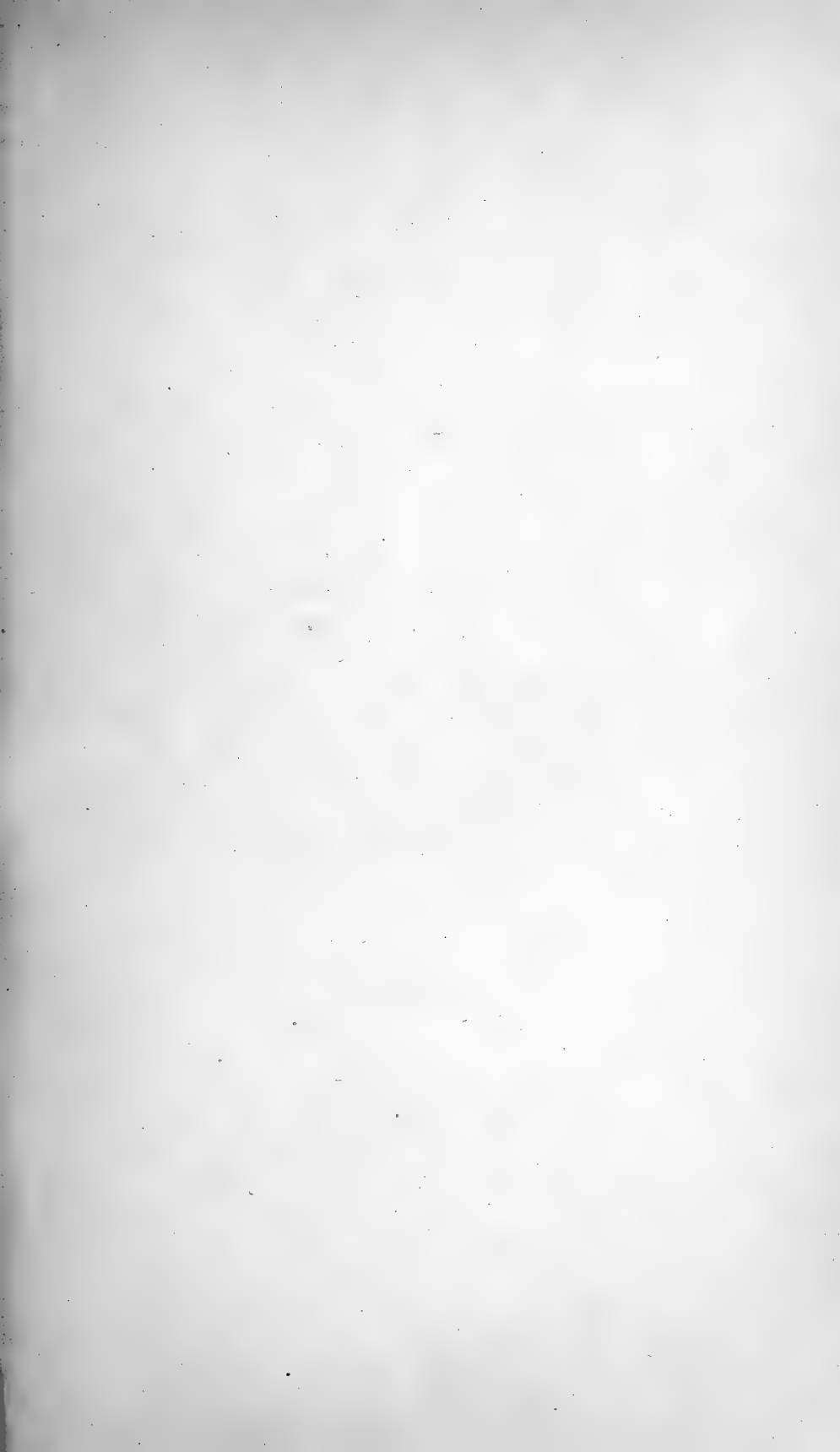
*Distribution*.—World wide.













18

DESCRIPTION OF A NEW SPECIES OF ANILOCRA  
FROM THE ATLANTIC COAST OF  
NORTH AMERICA

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

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No. 1779.—From the Proceedings of the United States National Museum,  
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## DESCRIPTION OF A NEW SPECIES OF ANILOCRA FROM THE ATLANTIC COAST OF NORTH AMERICA.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

Through the Biological Survey of the U. S. Department of Agriculture, three specimens of a new species of *Anilocra* were sent to the U. S. National Museum by Mr. W. J. Hoxie, of the Natural History Society of Savannah, Ga. This is the third species of the genus known from the Atlantic coast of North America, the two species previously described being *Anilocra laticauda* Milne Edwards and *A. plebeia* Schiøedte and Meinert.

### ANILOCRA ACUTA, new species.

Body 34 mm. long and 12 mm. wide. Surface smooth.

Color yellow, marked with numerous brown dots, which in the middle of the dorsal surface of the last three segments of the thorax almost merge into a dark brown background, leaving a few wavy light areas on either side of the median line.

The head is as long as wide, 4 mm. by 4 mm. The lateral margins converge slightly to a widely rounded anterior extremity. The eyes are large (1 mm. wide and 2 mm. long), distinct and composite, and are placed in the post-lateral angles. The antennæ of the first pair are composed of eight articles and extend to the middle of the eye on the lateral margin. The antennæ of the second pair are composed of ten articles and reach the posterior margin of the head.

The first segment of the thorax is the longest, 3 mm.; the five following segments are subequal, each about 2 mm. in length; the seventh segment is the shortest,  $1\frac{1}{2}$  mm. The thorax widens gradually from the first segment, which is 7 mm. wide, to the sixth, which is 12 mm. wide. Epimera are present on all the segments with the exception of the first; those of the second and third segments are narrow, elongate, and posteriorly rounded; the last four

are more acute at their extremities. The epimera of all the segments reach the post-lateral angles of their respective segments.

The first segment of the abdomen is the shortest, one-half mm. long; the three following are subequal, each being 1 mm. in length; the fifth segment is  $1\frac{1}{2}$  mm. The lateral parts of the segments are drawn out posteriorly in acute processes. The sixth or terminal segment is as long as wide, 9 mm. by 9 mm. At the base it is 8 mm. and then widens a little before converging to a triangular extremity with the apex rounded. The branches of the uropoda are equal in length and do not reach the tip of the terminal abdominal segment by nearly 2 mm.; the outer branch is produced to an acute extremity; the inner branch is oblique, with the outer post-lateral angle acutely produced; the inner branch is somewhat wider than the outer branch.

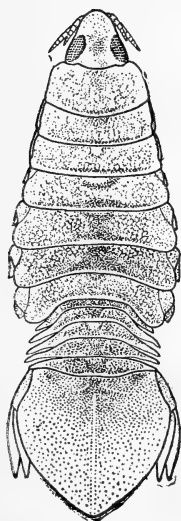
All the legs are prehensile.

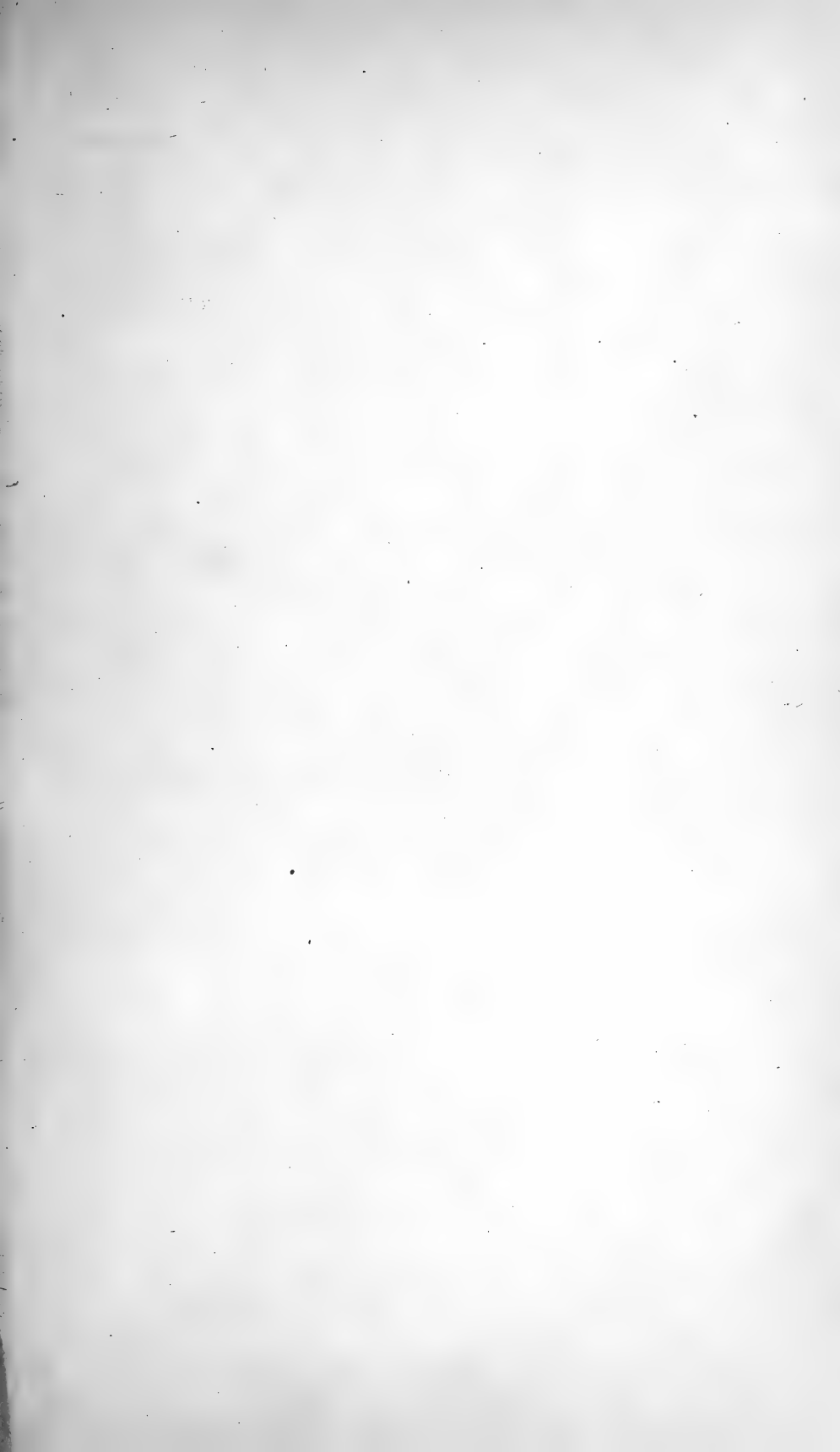
Three specimens were taken from a gar-pike.

*Type-specimen*.—Cat. No. 40939, U.S.N.M.

ANILOCRA ACUTA.  $\times 2$ .

This species differs from the other two found on the Atlantic coast, in the larger head, shorter antennæ, larger eyes, which are also closer together, in the shape of the head and the terminal abdominal segment, the much shorter uropoda, and in the shape of the uropoda.







Richardson, H. 19  
Mary A. Rathbun 14  
DEPARTMENT OF COMMERCE AND LABOR

BUREAU OF FISHERIES

GEORGE M. BOWERS, Comptroller

MARINE ISOPODS COLLECTED IN THE  
PHILIPPINES BY THE U. S. FISHERIES  
STEAMER ALBATROSS IN 1907-8

Bureau of Fisheries Document No. 736



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1910



DEPARTMENT OF COMMERCE AND LABOR

BUREAU OF FISHERIES

GEORGE M. BOWERS, *Commissioner*

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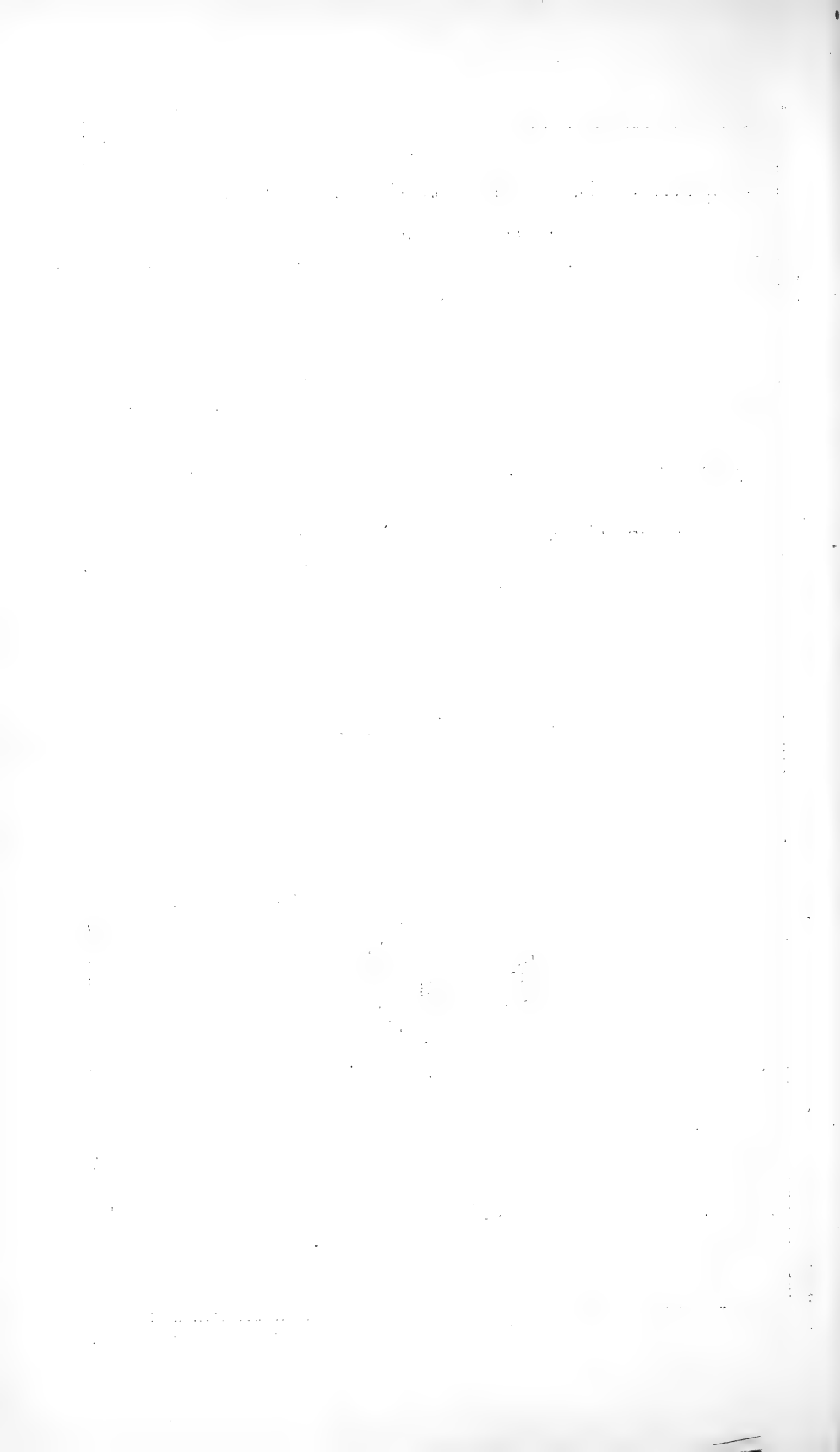
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GOVERNMENT PRINTING OFFICE  
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**MARINE ISOPODS COLLECTED IN THE PHILIPPINES BY THE  
U. S. FISHERIES STEAMER ALBATROSS IN 1907-8**

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**BY HARRIET RICHARDSON**

*Collaborator, Division of Marine Invertebrates, U. S. National Museum*

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## MARINE ISOPODS COLLECTED IN THE PHILIPPINES BY THE U. S. FISHERIES STEAMER ALBATROSS IN 1907-8.

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Collaborator, Division of Marine Invertebrates, U. S. National Museum.

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Our knowledge of the Philippine isopods is limited to a few species. No one paper has been published treating exclusively of the forms from those islands, but in a number of papers and general works mention has been made occasionally of an isopod from the Philippines. The first author who described a Philippine isopod was Carl Semper, in 1868, and he described the species known as *Aga spongiophila*, which was found living in a sponge, *Euplectella aspergillum*. Robby Kossmann in 1872 described a number of Bopyridæ. Later J. C. Schiødt and Fr. Meinert in 1879-84 and Semper in 1880 described other isopods from the Philippines.

Only four of the known species previously recorded from the Philippines were collected by the *Albatross* expedition in 1907-8; these are *Probopyrus ascendens* Semper, *Rocinela orientalis* Schiødt and Meinert, *Cymothoa stromatei* Bleeker, and *Aga spongiophila* Semper. Many of the species collected there at this time, however, have been already described and recorded from other places not far distant, such as Japan, Java, Ceylon, Sulu Sea, Nicobar Islands, New Guinea, Isle of Pines, New Britain, India, Amboina, the Society Islands, Singapore, Hongkong, etc. These known species were described by the following authors: Leach, in 1818; Dana, in 1853; Bleeker, in 1857; Miers, in 1878-1884; Hansen, in 1890; Bonnier, in 1900; Stebbing, in 1902-1905; and Nobili, in 1906. The works of other authors have been studied in this connection: H. Milne Edwards, Haswell, Whitelegge, Filhol, Hilgendorf, Thomson, Koebel, Lanchester, Bouvier and A. Milne Edwards, Beddard, Baker, Haller, Chilton, Heller, Max Weber, etc.

In addition to the known isopods collected by the *Albatross* in the Philippines this expedition obtained thirty-eight species new to science, three of them the types of new genera.

## CYMOTHOIDEA or FLABELLIFERA.

## Family CIROLANIDÆ.

Genus *BATHYNOMUS* A. Milne Edwards.*Bathynomus döderleini* Ortmann.

*Bathynomus döderleini* Ortmann, Proc. Acad. Nat. Sci. Phila., 1894, p. 191-193. Bouvier, C. R. Acad. Sci., vol. 132, p. 643-645. A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zool., Harvard College, vol. 22, no. 2, 1902, p. 159-165, pl. 7, 8. Richardson, Proc. U. S. Nat. Mus., vol. 37, 1909, p. 78.

Locality: Stations 5282, off Point Talin, Luzon; 5301, off Pratas Island, China Sea; and 5348, Palawan Passage, Point Tabonan. Five specimens. Depth: 248 to 375 fathoms.

*Bathynomus affinis*, sp. nov.

This species is very close to *Bathynomus döderleini* Ortmann,<sup>a</sup> but differs in having nine teeth on the posterior margin of the terminal abdominal segment instead of seven;

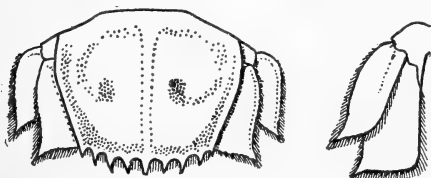


FIG. 1.—*Bathynomus affinis*. Caudal segment and uropoda.  $\times \frac{1}{2}$ .

in having the inner branch of the uropoda with the posterior margin almost straight and the outer postlateral angle abruptly produced in an acute process or tooth; in having a well-marked carina on the epimera of the last four segments of the thorax, which is only faintly marked in *B. döderleini*; and in the less

conspicuous median carina of the terminal abdominal segment.

One specimen was taken at station 5259, Caluya Island (S), S. 73° W., 12 mi. (11° 57' 30'' N., 121° 42' 15'' E.) at a depth of 312 fathoms, in gray mud and globigerin ooze. The type is catalogue number 40908, United States National Museum.

*Bathynomus propinquus*, sp. nov.

This species is close to *Bathynomus giganteus* A. Milne Edwards, but differs in the shape of the terminal abdominal segment, the number of teeth on the posterior margin being the same; in the much narrower outer branch of the uropoda; in the differently shaped inner branch, which is more produced at both the inner and outer postlateral corners; in the longer second antennæ, which extend to the middle of the fifth thoracic segment, while in *B. giganteus* they extend only to the middle of the fourth segment; in having a carina on the epimera of the last three segments of the thorax; and in the differently shaped frontal lamina.

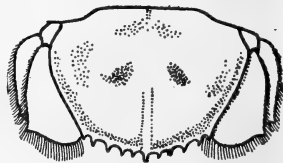


FIG. 2.—*Bathynomus propinquus*.  $\times \frac{1}{2}$ .

One specimen was taken, at station 5284, off Santiago, western Luzon, at a depth of 422 fathoms. The type is catalogue number 40909, United States National Museum.

Genus *CIROLANA* Leach.*Cirolana orientalis* Dana.

*Cirolana orientalis* Dana, U. S. Expl. Exp., Crust., xiv, 1853, p. 773, pl. LI, fig. 7 a-d. Hansen, Vidensk. Selsk. Skr. (6), naturvidenskabelig og matematisk Afd., v, 3, 1890, p. 353-354, pl. IV, fig. 4-4 h. Stebbing, Willey's Zool. Results, 1901, pt. v, p. 633.

Locality: A large number of specimens from Cataingan Bay; one specimen from Papahag, Tawi Tawi; a few specimens from Papahag Island, Tawi Tawi, found on a floating slice of bread; twenty specimens from San Miguel Bay. Depth: Shore.

<sup>a</sup> Proc. Acad. Nat. Sci. Phila., 1894, p. 191-193. See also A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zool., Harvard College, vol. 22, no. 2, 1902, p. 159-165, pl. 7, 8.

A label accompanying the specimens from Cataingan Bay reads: "Very ravenous, attacking small fishes, first devouring eyes, then gills, then working into body cavity—all of this is done inside of ten minutes."

Dana's specimens were from the Sulu Sea, Hansen's from Nangkovry, Nicobar Islands, Stebbing's from Conflict Group, New Guinea, and Isle of Pines.

***Cirolana albicaudata* Stebbing.**

*Cirolana albicaudata* Stebbing, Willey's Zool. Results, 1902, pt. v, p. 631-632, pl. LXVII B.

Locality: One specimen, a female, from Santa Cruz, Marinduque Island (electric light); three specimens, two males and a female, from Tomindao Island anchorage (electric light); thirteen specimens from Java Island anchorage (electric light); no locality, twenty specimens; three specimens from Sabayan Bay, Mindoro; one specimen from Port San Pio V, Camiguin Island. Stebbing's specimens were from Barawon, Blanche Bay, New Britain.

***Cirolana epimerias*, sp. nov.**

Body ovate, 14 mm. long: 5.5 mm. wide. Surface smooth. Color, yellow.

Head wider than long, 1.5 mm.: 2.5 mm. Eyes very small, composite, and situated in the anterolateral angles. Anterior margin of head widely rounded and without any median point. There is a slight elevation on the posterior margin in the median line. The first pair of antennæ have the first two articles short and subequal. The third article is 1.5 times the length of the second. The flagellum, composed of five articles, extends to the middle of the fifth peduncular article of the second antennæ, or a little beyond the anterolateral angle of the first thoracic segment. The second antennæ have the first two articles short and subequal; the third is about twice as long as the second; the fourth and fifth are subequal and each is twice as long as the third; the flagellum, composed of sixteen articles, extends to the posterior margin of the third thoracic segment. The frontal lamina is short and broad, about twice as long as wide.

The first segment of the thorax is the longest, being 2 mm. long; the five following segments are subequal, each being 1.5 mm.; the seventh segment is the shortest, being 1 mm. long. All the segments, except the first, are provided with epimera; those of the second and third segments do not reach beyond the postlateral angles of the segments; those of the last four extend beyond the posterior margins of the segments; those of the fifth, and especially the sixth, are greatly produced and extend outward laterally in a most conspicuous way.

The first abdominal segment is entirely concealed by the seventh thoracic segment; the three following segments are very short, all three together measuring 1 mm.; the fifth segment is long, being 1 mm.; the sixth or terminal segment is a little wider than long, 2.5 mm.: 3 mm. It is triangular in shape, with sides converging to a rounded extremity armed with six spines. The inner branch of the uropoda is large and widely rounded posteriorly and extends beyond the extremity of the terminal abdominal segment; the outer branch is narrower and shorter than the inner branch and also posteriorly rounded.

The posterior margins of the last two segments of the thorax and the first three abdominal segments, the margins of the uropods, and the terminal abdominal segment are fringed with short thick hairs.

The first three pairs of legs are short, the last four pairs elongate. All are furnished with spines.

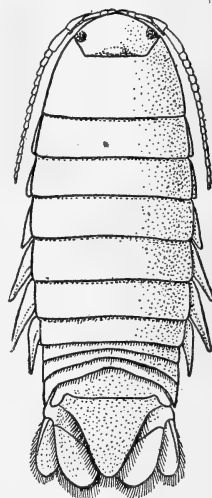


FIG. 3.—*Cirolana epimerias*.  
× 4.

The female differs from the male in not having conspicuously produced epimera and in not having the segments of the thorax and abdomen fringed with hairs.

Three specimens, two males and one female, were collected at station 5664, Macassar Strait, Kapoposang Light, at a depth of 400 fathoms. Type specimen, catalogue number 41022, United States National Museum.

*Cirolana excisa*, sp. nov.

Body ovate, about twice as long as wide, 4 mm.: 8.5 mm. Surface smooth. Color yellow, marked with numerous black arborescent marks.

Head wider than long, 1 mm.: 2 mm., with the anterior margin rounded and produced in a small median point. Eyes small, black, composite, round, 0.5 mm.: 0.5 mm., separated by a distance of 1 mm. and situated in the lateral angles. The first pair of antennæ have the first two articles of the peduncle short and subequal; the third article is as long as the first two taken together. The flagellum, composed of sixteen articles, extends a little beyond the peduncle of the second antennæ. The second antennæ have the first three articles of the peduncle short and subequal; the last two are subequal and each is about as long as the first three taken together. The flagellum, composed of about thirty-three articles, extends to the postlateral angle of the fourth thoracic segment. The frontal lamina is short and broad, about twice as long as wide.

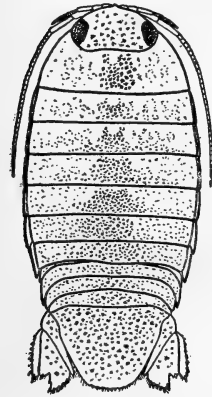


FIG. 4.—*Cirolana excisa*.  
× 6.

The first segment of the thorax is a little longer than any of those following; the last two are slightly shorter than any of the preceding segments. Epimera are present on all the segments except the first, and do not extend beyond the postlateral angles of the segments except those of the last two, which are acutely produced.

The first segment of the abdomen is not visible; the second is almost entirely concealed; the three following are subequal in length, with the lateral angles of the third and fourth segments reaching those of the fifth segment. The sixth or terminal segment is a little wider than long, 2 mm.: 2.5 mm., and is broadly rounded posteriorly, with the posterior margin furnished with seven teeth, and about eight spines. The inner branch of the uropoda is broad and longer than the terminal abdominal segment; it is obliquely truncate with the outer, postlateral angle produced, the posterior margin furnished with five teeth and the outer margin incised, with two teeth within the incision. The outer branch is narrow, and produced to an acute extremity ending in two teeth, both margins being dentate. The uropods and the terminal abdominal segment are fringed with hairs on the margins.

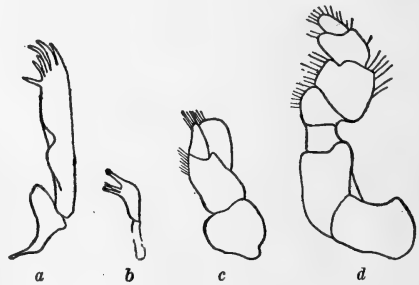


FIG. 5.—*Cirolana excisa*. a, First maxilla (outer lobe); b, first maxilla (inner lobe); c, second maxilla; d, maxilliped. × 77½.

The first three pairs of legs are short, the last four pairs long, and all are spinulose.

Three specimens were collected at station 5554, Jolo Island and vicinity, Cabalian Point (Jolo), at a depth of 25 fathoms. Type, catalogue number 41012, United States National Museum.

This species is similar to *Cirolana japonica* Hansen,<sup>a</sup> but differs in the form of the inner branch of the uropoda and in the form of the second maxillæ.

<sup>a</sup> Vidensk. Selsk. Skr. (6), v, pt. 3, 1890, p. 349-351, pl. iv, fig. 2 a-l.

*Cirolana curta*, sp. nov.

Body oblong-ovate, three times longer than wide, 6 mm.:18 mm. Surface smooth. Color yellow, marked with numerous black marks, close together; uropods and abdomen yellow, with black marks only at the base.

Head wider than long, 1.5 mm.:3.5 mm., with the anterior margin produced in a small median point, on either side of which is a small excavation. Eyes large, quadrate, about as wide as long, 1 mm.:1 mm., composite, situated in the antero-lateral angles and separated by a distance of 1.5 mm. at the anterior extremity. The first pair of antennæ have the first two articles of the peduncle short and sub-equal; the third is a little longer than the first two taken together, and extends to the end of the third article of the peduncle of the second antennæ. The flagellum, composed of fourteen short articles, extends to the end of the fourth article of the peduncle of the second antennæ. The first two articles of the peduncle of the second antennæ are short and subequal; the third and fourth are subequal and each is a little longer than the first two taken together; the fifth is about 1.5 times the length of the preceding article; the flagellum, composed of nineteen articles, extends to the postlateral angles of the second thoracic segment. The frontal lamina or interantennal plate is long and narrow.

The first segment of the thorax is twice as long as the second, being 2 mm. in length; the last five segments are subequal, each being 1.5 mm. long. All except the first are furnished with wide epimera, those of the second and third segments not produced beyond the posterior margin of the segments, while those of the last four are but little produced. All are crossed by a transversely oblique carina.

The first five segments of the abdomen are short, the first being partly covered by the seventh thoracic segment; the second, third, and fourth are 0.5 mm. long, the fifth being about 0.75 mm. The sixth or terminal segment is a little wider than

long, 3 mm.:4 mm., and is widely rounded posteriorly. The inner branch of the uropoda is very wide and long, and extends 0.5 mm. beyond the tip of the abdomen; it is widely rounded posteriorly. The outer branch is short and narrow, about 0.75 mm. shorter than the inner branch and about one-third as wide; it is posteriorly rounded. Both branches and the terminal abdominal segment are fringed with long hairs and furnished with a few spines.

The legs are furnished with spines and hairs; those of the last four pairs have the basis very much enlarged and fringed with extremely long hairs, especially the seventh pair.

Only one specimen, the type, was obtained, at station 5565, between Jolo and Tawi Tawi, Dammi Island, at a depth of 242 fathoms. Catalogue number 41013, United States National Museum.

This species differs from *Cirolana schiödtei* Miers<sup>a</sup> in the form of the frontal lamina and the shape of the abdomen and uropoda. It also differs from *C. tenuistylis* Miers<sup>a</sup> in the form of the abdomen and uropoda. It differs from *Cirolana rossii* Miers<sup>b</sup> in the shape of the eyes and of the uropoda. It is also different from *C. japonica* Richardson and *C. lata* Haswell.

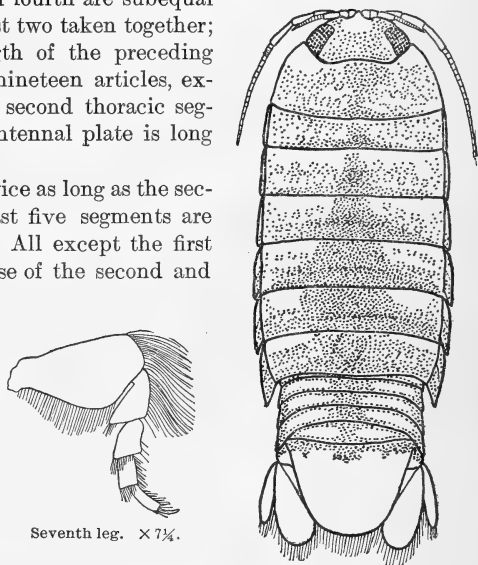


FIG. 6.—*Cirolana curta*.  $\times 4\frac{3}{4}$ .

Seventh leg.  $\times 7\frac{1}{4}$ .

<sup>a</sup> Zoological collections of the *Alert*, 1884, p. 302, 304, pl. xxxiii, fig. A. B.

<sup>b</sup> Catalogue of the Stalk and Sessile-eyed Crustacea of New Zealand, 1876, p. 109, pl. iii, fig. 3.

Genus **EURYDICE** Leach.**Eurydice orientalis** Hansen.

*Eurydice orientalis* Hansen, Vidensk. Selsk. Skr. (6), naturvidenskabelig og matematisk Afd., v, 3, 1890, p. 369-370, pl. vi, fig. 2-2h.

Locality: A large number of specimens, all females, were collected at Nasugbu, Luzon, and one female was taken at Busin Harbor, Burias Island, by electric light. One specimen, no locality, electric light; one from anchorage, Nato, Luzon; nine from Cabugao Bay; fifty from Mahinog, anchorage, Camiguin Island. Hansen's two specimens, both males, were from Java.

Family **BARYBROTIDÆ**.Genus **BARYBROTES** Schiøedte and Meinert.**Barybrotos agilis** Schiøedte and Meinert.

*Barybrotos agilis* Schiøedte and Meinert, Nat. Tidsskr. (3), 1879-1880, p. 283-284, pl. iii, fig. 11-13.

*Barybrotos indus* Schiøedte and Meinert, Nat. Tidsskr. (3), 1879-1880, p. 281-283, pl. iii, fig. 1-10, pl. iv, fig. 1.

*Barybrotos agilis* Hansen, Vidensk. Selsk. Skr. (6), v, pt. 3, 1890, p. 403-405, pl. ix, figs. 3-3s.

Locality: Varadero Bay, Mindoro; one specimen. Schiøedte and Meinert had one specimen from the Bay of Bengal, another from the sea of Java, and another from Gaspar Straits.

Family **ALCIRONIDÆ**.<sup>a</sup>Genus **ALCIRONA** Hansen.**Alcirona tuberculata**, sp. nov.

Body oblong-ovate, 7.5 mm. long and 3 mm. wide. Color yellow.

Head wider than long, 1 mm.: 1.75 mm., with the anterior margin rounded. Eyes moderately large, composite, and situated at the postlateral angles. First pair of antennæ with the peduncle composed of two short articles, the first of which is about twice as long as the second; flagellum, composed of fourteen articles, extends to the middle of the first thoracic segment. Second pair of antennæ with a peduncle of five

articles, the first two of which are short and subequal; the third is about equal to the first two taken together; the last two are also subequal, and each about as long as the first three taken together; flagellum, composed of twenty articles, extends to the posterior margin of the third thoracic segment.

The first segment of the thorax is a little longer than any of the following five segments, which are subequal, and the seventh is a little shorter. Epimera are present on all the segments except the first. The first

two are narrow, with rounded extremities, and do not extend beyond the posterior margin of the segments. The two following have the posterior extremities acutely produced and extending just a little beyond the postlateral angles. The last two are also acutely produced, and they extend some distance beyond the postlateral angles of the segments.

The first segment of the abdomen is entirely concealed; the three following segments are subequal; the fifth is a little longer than any of the preceding; the sixth or terminal

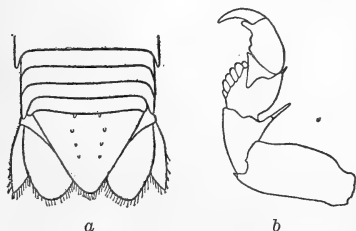


FIG. 7.—*Alcirona tuberculata*. a, Abdomen, X 9; b, first leg of male, X 20.

<sup>a</sup> It does not seem necessary for the reasons given to change the family name to Corallanidæ, as Stebbing has suggested, nor to change Cirolanidæ to Eurydicidæ nor Arcturidæ to Astacillidæ.



segment is triangular, with apex rounded and furnished with six small spines and numerous hairs. Its dorsal surface has two parallel rows of four small tubercles, one row on either side of the median line. The outer branch of the uropoda is produced to an acute extremity and does not reach beyond the extremity of the abdomen; the inner branch is about twice as wide, more rounded at the extremity, and extends just a little beyond the extremity of the abdomen. Both branches are fringed with hairs and furnished with spines.

The first three pairs of legs are prehensile and have the merus armed with five (in the male, four in the female) stout and blunt spines, close together with lateral edges meeting. The propodus has a process at the inner distal angle and has the inferior margin rather irregular in outline. The last four pairs of legs are ambulatory and are furnished with a few spines.

Only two specimens, a male and a female, were collected at station 5141, Jolo Light, S. 17° E., 5.50 mi. (6° 09' 00" N., 120° 58' 00" E.). Depth, 29 fathoms, in coral and sand. Type specimens, catalogue number 40910, United States National Museum.

This species can be distinguished from all the known species of the genus by the parallel rows of tubercles on the abdomen and the difference in the prehensile legs.

#### Genus LANOCIRA Hansen.

##### *Lanocira gardineri* Stebbing.

*Lanocira gardineri* Stebbing, Fauna and Geography of the Maldive and Laccadive Archipelagoes, II, pt. 3, 1904, p. 706-707, pl. LI A; Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, p. 19.

Locality: Station 5108, Corrigidor Strait, N. 39° E., 22.50 mi. (14° 05' 25" N., 120° 19' 45" E.). (Two males and five females.) Depth: 13 fathoms. Stebbing's specimens were from Mahlosmadulu atoll and Galle reef; also Cheval Paar and "Gulf of Manaar."

The specimens collected by the *Albatross* differ from the type as described by Stebbing in having the apex of the terminal abdominal segment more rounded and less truncate and in not having the dorsal surface of this segment furnished with setæ in the male; the abdomen of the female is furnished with setæ. Otherwise they seem to agree perfectly, and have the head of the male with the frontal margin produced and upturned and with the two small tubercles on the posterior portion of the head between the eyes.

#### Family ARGATHONIDÆ.

##### Genus ARGATHONA Stebbing.

##### *Argathona setosa*, sp. nov.

Body oblong-ovate, 4.5 mm. wide and 20 mm. long. Color yellow, with a few scattered small black dots about the middle of the anterior half and on the entire posterior half of the body.

Head about twice as wide as long, 1 mm.: 2 mm., with the anterior margin a little produced in the middle and slightly upturned. The eyes are large, composite, oval in shape and situated in the postlateral angles. They are separated by a distance in front equal to the length of one eye. The first pair of antennæ have the peduncle composed of two articles, the first of which is about 1.5 times longer than the second; the flagellum, composed of thirteen articles, extends to the end of the fourth peduncular article of the second pair of antennæ or to the posterior margin of the head. The second antennæ have the first two articles short and subequal; the third is about 1.5 times longer than either of the first two; the fourth and fifth are subequal, and each is about three times longer than the third; the flagellum, composed of twenty articles, extends to the posterior margin of the third thoracic segment.

The segments of the thorax are subequal. Epimera are present on all the segments with the exception of the first. The first two are narrow, with posterior extremities rounded and not extending beyond the posterior margins of the segments. The third

has the posterior extremity slightly produced beyond the postlateral angle of the segment. The last three have the posterior extremities very acutely produced and extending considerably beyond the postlateral angles of the segment, the last reaching as far as the postlateral angles of the third abdominal segment.

The first abdominal segment is entirely concealed by the seventh thoracic segment. The three following segments are short and subequal. The fifth segment is a little longer in the middle than any of the preceding segments. The sixth or terminal segment is triangular, with apex rounded-truncate and furnished with hairs. The outer branch of the uropoda is narrow and produced to a blunt extremity. The inner branch is twice as wide as the outer branch, has the posterior margin straight in the middle, with the inner postlateral angle rounded and the outer postlateral angle produced to a blunt extremity. The last three segments of the thorax, the abdomen, and the uropoda are thickly covered with stiff setæ, or spines, those on the abdomen becoming denser and longer. The first three pairs of legs are prehensile, the last four pairs ambulatory. The prehensile legs have the merus armed with four spines.

Only one specimen, a female, was collected at station 5254, Linao Point, N. 44° E., 1 mi. (7° 02' 00" N., 125° 37' 45" E.), at a depth of 21 fathoms, in sand and coral. Type specimen, catalogue number 40911, United States National Museum.

I have placed this species in Stebbing's genus *Argathona*,<sup>a</sup> notwithstanding the slight difference in the form of the second maxilla, which, instead of ending in a curved,

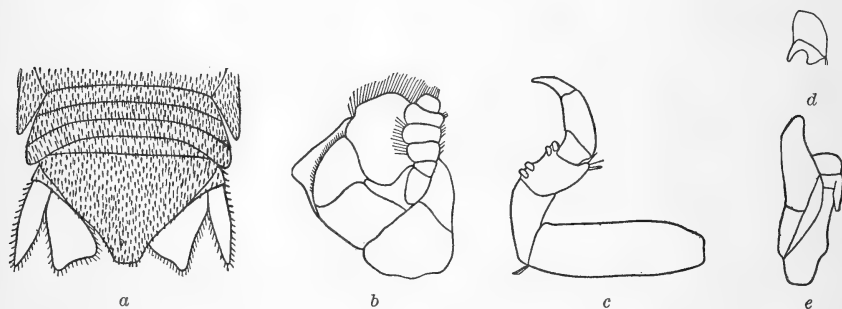


FIG. 8.—*Argathona setosa*. a, Abdomen,  $\times 9\frac{1}{2}$ ; b, maxilliped,  $\times 27\frac{1}{2}$ ; c, first leg,  $\times 20\frac{1}{2}$ ; d, first maxilla,  $\times 38\frac{1}{2}$ ; e, second maxilla,  $\times 51\frac{1}{2}$ .

sharp unguis, seems to end bluntly. There is also an additional article to the maxillipeds, but this may have been overlooked in Stebbing's specimen.

This species is very similar to Stebbing's species, *Argathona normani*, but differs in lacking tubercles on the last two thoracic segments and on the fourth, fifth, and sixth segments of the abdomen. The shape of the inner branch of the uropods is also different. Stebbing's specimens were from the Gulf of Manaar and south of Galle.

#### *Argathona sulcata*, sp. nov.

Body oblong-ovate, 2.5 times longer than wide, 8 mm.: 20 mm. Surface smooth. Color light yellow.

Head wider than long, 2 mm.: 3.5 mm. Anterior margin rounded and produced in the middle in a very small, median point. Eyes twice as long as wide, 0.5 mm.: 1 mm., composite, and situated in the postlateral angles. The first pair of antennæ have the peduncle composed of two articles, the first somewhat dilated; the flagellum, which is composed of thirteen articles, extends to the posterior margin of the head. The second pair of antennæ have the first three articles short and about equal, and do not extend beyond the peduncle of the first antennæ; the fourth and fifth articles are long and slender, and extend to the end of the first thoracic segment; the flagellum, composed of thirty-seven articles, extends to the posterior margin of the sixth thoracic segment.

<sup>a</sup> Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, art. XXIII, p. 16-18, pl. III A.

The first and fourth segments of the thorax are subequal, each being 2 mm. long; the second, third, fifth, and sixth are subequal, each being 1.5 mm. in length; the seventh segment is slightly shorter than the sixth. All the segments except the first are provided with epimera, those of the second and third segments being rounded posteriorly and not extending beyond the postlateral angles of the segments; those of the last four segments become gradually more acute and more produced beyond the postlateral angles of the segments, the epimera of the seventh segment reaching the postlateral angles of the third abdominal segment.

The first segment of the abdomen is entirely concealed by the last thoracic segment; the three following segments are short and subequal; the fifth is a little longer than any of the preceding segments. The sixth or terminal segment is nearly as long as wide, 5 mm.: 5.5 mm., is triangular in shape, with apex acute. On the dorsal surface are four longitudinal carinate ridges, one on either side of the median line and one on either side along the lateral margin. Between these carinæ are three grooves

or sulcate regions. The inner branches of the uropoda do not extend beyond the extremity of the abdomen; they have the outer posterior angle roundly produced. The outer branch is slightly shorter than the inner branch and is ovate. The margins of the uropods are coarsely crenulate; those of the terminal abdominal segment are minutely crenulate; all are furnished with hairs.

The first three pairs of legs are prehensile; the last four pairs ambulatory.

Only one specimen was collected, at station 5453, east coast of Luzon, Legaspi Light, at a depth of 146 fathoms. Type specimen, catalogue number 41010, United States National Museum.

#### *Argathona similis*, sp. nov.

This species is close to *Argathona setosa*, but differs in its larger size, being 7 mm.: 19 mm.; in its longer antennæ, those of the first pair extending to the end of the fourth peduncular article of the second pair and those of the second pair extending to the end of the third abdominal segment on one side and to the end of the sixth thoracic segment on the other; in having the terminal abdominal segment more acute

and tipped with four setæ; in the differently shaped inner branch of the uropoda; and in the wider space between the eyes.

One specimen, a male, was collected at Limbé Strait, Celebes. Type, catalogue number 41015, United States National Museum.

#### Family ÆGIDÆ.

#### Genus ÆGA Leach.

#### *Æga excisa*, sp. nov.

Body oblong-ovate, 13 mm. wide and 36 mm. long. Color, in alcohol, yellow. Surface punctate.

Head wider than long, 3 mm.: 7.5 mm., with the anterior margin produced in a small median point. Eyes large, oval, meeting in the center of the head and occupying most of the dorsal surface. There is a small V-shaped space in front of the eyes, and

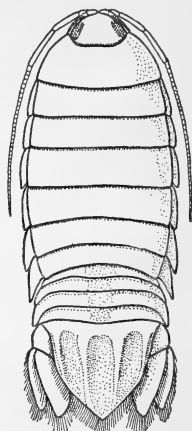


FIG. 9.—*Argathona sulcata*.  $\times 2\frac{1}{2}$ .

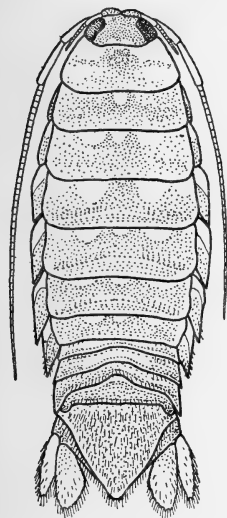


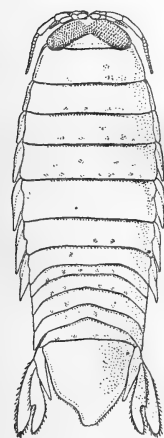
FIG. 10.—*Argathona similis*.  $\times 3$ .

a larger one posterior to them. The first pair of antennæ have the first two articles rather large and dilated, the second article being somewhat smaller than the first; the third article is about as long as the first two articles taken together. The flagellum is composed of eight articles and extends to the middle of the last article of the peduncle of the second antennæ. The second pair of antennæ have the first three articles of the peduncle short and subequal; the last two are subequal in length and each is about as long as the first three taken together. The peduncle extends to the posterior margin of the head. The flagellum is composed of thirteen articles on one side and nineteen on the other and extends to the posterior margin of the first thoracic segment.

First and fourth segments of thorax each 3 mm. long; second, third, and sixth segments each 2.5 mm. in length; fifth segment 3.5 mm.; seventh segment 1.5 mm. Epimera present on all the segments except the first. The first two are long and narrow, with rounded extremities, and do not extend beyond the posterior margin of the segments; the last four have the posterior extremities acutely produced and extending beyond the postlateral angles of the segments, the last three being more acute and longer than the preceding. All are furnished with a longitudinal carina, and there is also a carina on the lateral margins of the first thoracic segment.

The first segment of the abdomen is partly covered by the seventh thoracic segment; the second, third, and fourth segments are subequal in length, each being 1.5 mm. long; the fifth segment is 2 mm. long in the middle portion; the terminal segment is triangulate, but the tip is broken, so that its exact shape is questionable. The branches of the uropoda are equal in length; the outer is long and narrow with the extremity narrowly rounded. The inner has a rather deep emargination on the exterior margin about two-thirds the length of the branch. The peduncle of the uropoda is produced in an acute process which extends to the emargination of the inner branch.

The first pair of prehensile legs have four spines on the merus, the second have six spines on the merus and one at the distal extremity of the ischium, the third pair have



Maxilliped.  $\times 9\%$ .

FIG. 11.—*Ega excisa*.  $\times 1\frac{1}{2}$ .

seven spines on the merus and two on the ischium at the distal extremity.

Only one specimen, a female, comes from station 5173, Jolo Light, N.  $82^{\circ}$  E., 6.75 mi. ( $6^{\circ} 02' 55''$  N.,  $120^{\circ} 53' 00''$  E.). Depth, 186 fathoms, in shells and coral. Catalogue number 40912, United States National Museum.

The shape of the abdomen and uropoda somewhat resemble *Pseudæga punctata* Thomson,<sup>a</sup> but the eyes and antennæ are totally different.

### *Ega dubia*, sp. nov.

Body of female oblong-ovate, more than three times longer than wide, 6 mm.: 19 mm. Color yellow, with numerous black and brown arborescent spots close together and covering the entire surface of the body except the posterior half of the terminal segment of the abdomen and the uropoda.

Head twice as wide as long, 2 mm.: 4 mm., with the anterior margin widely rounded. Eyes large, meeting in the middle of the head and covering the entire dorsal surface, with the exception of a small V-shaped place in front, and extending under on the ventral side as far as the mouth parts. The first pair of antennæ have the first two

<sup>a</sup> Trans. N. Zeal. Inst., vol. xvi, 1883, p. 234.

articles subequal and not dilated; the third is about as long as the first two taken together. The flagellum is composed of twelve articles and extends to the posterior margin of the head. The second antennæ have the first three articles short, the first and third about equal in length and the second shorter; the fourth is about 1.5 times longer than the third, and the fifth 1.5 times longer than the fourth. The flagellum is composed of about thirty articles and extends to the middle of the fourth thoracic segment.

The first three segments of the thorax and the seventh segment are subequal, each being 1.5 mm. long; the fourth, fifth, and sixth segments are equal in length, each being 2 mm. long. Epimera are present on all the segments of the thorax except the first. The first two are in the form of narrow plates with rounded extremities not extending beyond the posterior margins of the segments; the following four pairs are acutely produced posteriorly and extend beyond the postlateral angles, being increasingly longer and more acute.

The first segment of the abdomen is partly covered by the seventh thoracic segment.

The following three segments are subequal and each is about 0.75 mm. long; the fifth segment is 1 mm. long; the sixth or terminal segment is 3 mm. long and 3.5 mm. wide at the base, with sides gradually converging to a rounded extremity which has five small dentations on either side of a triangular median one. The uropoda are similar in shape, with the posterior extremity obliquely truncate and the lateral and posterior margins dentate; the inner branch extends to the extremity of the abdomen; the outer branch is shorter and smaller than the inner branch.

The first pair of prehensile

legs have one spine on the merus and one on the carpus; the two following pairs have three spines on the merus and two on the carpus; the following four pairs are ambulatory and covered with numerous spines.

The male is similar to the female, but differs in its smaller size, being only 14 mm. long and 5.5 mm. wide, and in the different length of the segments of the thorax, the first being 1.5 mm., the following four subequal and each 1 mm. long, and the sixth and seventh together equal to 1 mm.

Only two specimens, a male and a female, were collected at station 5218 (type locality), Amina Sola Island (E.), N. 10° W., 2 mi. (13° 11' 15" N., 123° 02' 45" E.), at a depth of 20 fathoms, in coarse sand, and station 5134, Balukbaluk Island (N.), S. 59° W., 6.25 mi. (6° 44' 45" N., 121° 48' 00" E.), at a depth of 25 fathoms, in fine sand. Type specimen, catalogue number 40913, United States National Museum.

The female of this species is very similar to the female of *Æga ommatophylax* Stebbing<sup>a</sup> but the male is entirely different from the male of that species. The female of the present species is much larger than the female of *Æga ommatophylax* and has a small V-shaped space in front of the eyes on the dorsal surface not shown in Stebbing's figure.

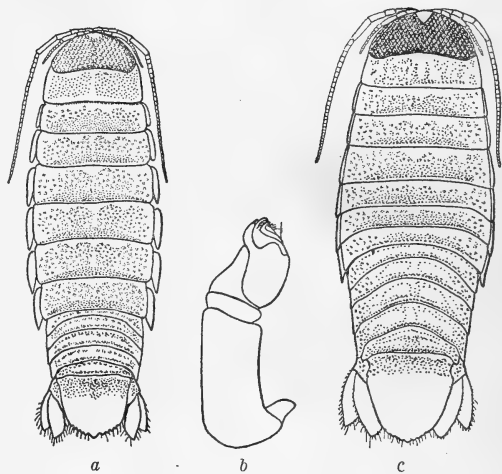


FIG. 12.—*Æga dubia*. a, Female,  $\times 2\frac{2}{3}$ ; b, maxilliped,  $\times 27\frac{1}{2}$ ; c, male,  $\times 4$ .

<sup>a</sup> Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, p. 21-23, pl. IV, v (A).

This species is very close to *Rocinela vigilans* Haswell,<sup>a</sup> but differs in having a small V-shaped space on the dorsal surface of the head in front of the eyes, and in having the posterior extremity of the abdominal segment and the uropods denticulate, which are described by Haswell as "smooth, entire." *Rocinela vigilans* may have been referred to the wrong genus, but at present it is impossible to do otherwise than accept the author's account and figures of this form. It is also close to *Æga cyclops* Haswell, which is not figured and is briefly described.<sup>b</sup>

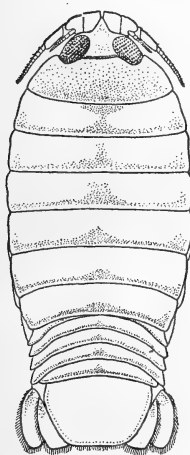
***Æga truncata*, sp. nov.**

Body ovate, a little more than twice as long as wide, 15 mm.:34 mm. Surface smooth. Color yellow, marked with small brown dots.

Head wider than long, 2.5 mm.:7 mm., with the anterior margin produced in a median triangular process very acute and long, the length of the head, including the process, being 3.5 mm. The eyes are large, oval, composite, placed in an obliquely transverse position and occupying most of the dorsal surface of the head, being 1.5 mm. apart. Each is 3 mm. in length and 1.5 mm. wide. The first pair of antennæ

have the first two articles greatly dilated and flattened, the first being as wide as long (1.5 mm.); the second article is as wide as the first and has the anterior angle produced in a large rounded process, the posterior angle in a very small rounded process; the third article is short and very narrow and does not extend beyond the anterior process of the second article; the flagellum is composed of eleven articles and extends to the posterior margin of the head or to the end of the peduncle of the second pair of antennæ. The second pair of

antennæ have the first and fourth articles of the peduncle short and subequal; the second and third together are equal in length to the first; the fifth is twice as long as the fourth; all are rather dilated and flattened. The flagellum is composed of sixteen articles and extends to the posterior margin of the first thoracic segment. The frontal lamina is broader anteriorly than posteriorly; the sides are straight and slightly converging; the anterior margin is almost straight, but on close obser-



Second leg.  $\times 7\frac{1}{4}$ .

FIG. 13.—*Æga truncata*.  $\times 1\frac{1}{2}$ .

vation is seen to be produced in a small median point.

The first segment of the thorax is the longest and is 4 mm. in length; the five following segments are subequal and each is 3 mm. long; the seventh is the shortest, being 2.5 mm. long. The first segment has no epimera, but there is a distinct carina on the lateral margin on either side. The following six segments are provided with wide epimera, on each of which there is a double oblique carina. All the epimera are rounded posteriorly and none are very much produced.

The first segment of the abdomen is concealed in the middle of the dorsal surface but is visible at the sides; the second and third segments are subequal in length and each is 1 mm. long; the fourth segment is about 1.25 mm. in length; the fifth is 1.5 mm. long; the sixth or terminal segment is 9 mm. wide at the base and is 6.5 mm. long. The sides curve slightly and converge to a truncate extremity, the postlateral angles being rounded. The branches of the uropoda are subequal in length and reach the extremity of the terminal abdominal segment; the outer branch is slightly narrower than the inner branch and has the posterior extremity rounded; the inner branch is posteriorly truncate. The margins of the uropods and the terminal abdominal segment are smooth and furnished with hairs but no spines.

<sup>a</sup> Proc. Linn. Soc., New South Wales, vol. v, 1880, p. 472.

<sup>b</sup> Ibid., vol. vi, 1881, p. 192.

The first three pairs of legs are prehensile, and have the propodus unarmed, the merus armed with one spine, the carpus with seven. The last four pairs are ambulatory and furnished with a few spines.

Five specimens were collected, at station 5501-3, North Mindanao and vicinity, Opol (Mindanao) at a depth of 214-226 fathoms, and station 5517, North Mindanao and vicinity, Point Tagolo Light (Mindanao) at a depth of 169 fathoms. They were found in siliceous sponges. Type specimen, catalogue number 40934, United States National Museum.

***Æga approximata*, sp. nov.**

Very close to *Æga synophthalma* Richardson,<sup>a</sup> but differs in having the first antennæ with a flagellum composed of fifteen articles, extending to the posterior margin of the first thoracic segment; in having the second antennæ with a flagellum composed of nineteen articles extending to the posterior margin of the third thoracic segment; in having the outer postlateral angles of all the epimera acute; in having the terminal abdominal segment more rounded and less triangular, with the margins crenulate and a very small V-shaped excavation in the center, which in *A. synophthalma* is produced in a small point; and in having a longer line of contact of the eyes, making the space in front of the eyes and behind the eyes more shallow.

Only one specimen was found, at station 5348, Palawan Passage, Point Tabonan, at a depth of 375 fathoms. Type, catalogue number 40940, United States National Museum.

***Æga spongiophila* Semper.**

*Æga spongiophila* Semper, Arch. Naturg., xxxiii, 1867, p. 84; Ann. Mag. Nat. Hist. (4), ii, 1868, p. 29. Miers, Journ. Linn. Soc., xiii, 1880, p. 509, pl. xxiv, fig. 3-5. Schöedte and Meinert, Nat. Tidsskr. (3), xii, 1879-80, p. 378-380, pl. ix, fig. 11-16.

Locality: Station 5371, near Marinduque, Tayabas Light, at a depth of 83 fathoms; one specimen.

This species has been previously recorded from the Philippines by the authors mentioned above. It lives in the sponge, *Euplectella aspergillum*.

***Æga antennata*, sp. nov.**

Body oblong-ovate, 43 mm. long and 16 mm. wide. Surface punctate. Color light-brown.

Head more than twice as wide as long, 3 mm.: 8 mm., with the front produced in a long acute median point extending 1.5 mm. beyond the anterior margin. Eyes large, oval, composite, twice as long as wide, 2 mm.: 4 mm., and separated by a distance of 2 mm. at their anterior extremities. The first pair of antennæ have the basal article of the peduncle twice as wide as long, 1 mm.: 2 mm., extending 0.5 mm. beyond the median point and having the inner anterior angle produced in an acute process directed inward; the second article is also short, but narrower than the first, and has the outer anterior part produced in a rounded process; the third article is slender and elongate; the flagellum, composed of fourteen articles, extends to the posterior margin of the head or to the end of the peduncle of the second antennæ. The second antennæ have the first three articles of the peduncle short, the first and third subequal, the second about half as long as either of the other two; the fourth is twice as long as the third; the fifth is 1.5 times the length of the fourth; the flagellum, composed of fourteen articles, extends two-thirds the length of the first thoracic segment.

The first four segments of the thorax are long and nearly subequal, the first being 4.5 mm., the second and fourth 4 mm., and the third 3.5 mm. The last three segments gradually decrease in length, the fifth being 3 mm., the sixth 2.5 mm., and the seventh 2 mm. Epimera are present on all the segments except the first, those of the second and third segments not reaching beyond the postlateral angles of the segments and

<sup>a</sup> Proc. U. S. Nat. Mus., vol. 37, 1909, p. 81.

having the outer postlateral angle produced in an acute point, the posterior margin below rounded; the epimera of the last four segments become gradually more acute and more produced beyond the postlateral angles of the segments. All are furnished with an obliquely longitudinal carina.

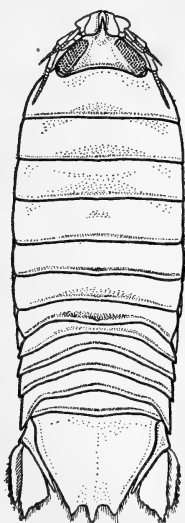


FIG. 14.—*Aega antennata*.  
× 1½.

The first segment of the abdomen is partly covered by the last thoracic segment; the three following segments are subequal and each is 2 mm. long; the fifth segment is a little longer than any of the preceding ones, being 2.5 mm. in length. The sixth or terminal segment is a little wider than long, 10 mm.: 12 mm. (including the median terminal tooth). The sides gradually converge to the posterior extremity, which is 5 mm. wide. The posterior margin is produced in three long acute teeth, the median tooth being 2 mm. long, the lateral teeth each 1 mm. The outer branch of the uropoda is shorter and narrower than the inner branch and is posteriorly acute; the inner branch has the outer postlateral angle acutely produced, the inner rounded. The inner branch does not quite reach the extremity of the median tooth of the terminal abdominal segment.

The first three pairs of legs are prehensile, the last four pairs ambulatory.

A single specimen was obtained, at station 5626, between Gillolo and Kayoa Island, at a depth of 265 fathoms. Type, catalogue number 41014, United States National Museum.

***Aega acuticauda*, sp. nov.**

Body oblong-ovate, almost three times as long as wide, 11 mm.: 31 mm. Surface punctate. Color yellow.

Head more than twice as wide as long, 2.5 mm.: 5.5 mm. Anterior margin produced in a small acute median point, on either side of which is a rather deep excavation for the reception of the basal article of the first antennæ. The eyes are large, composite, oval, 1.5 mm. wide and 2.5 mm. long and separated at the anterior extremity by a distance of 1.5 mm. The first pair of antennæ have the first two articles short, the first about 1.5 times longer than the second and also wider; the third article is long and slender, a little longer than the first two taken together, and extends to the end of the fourth article of the peduncle of the second antennæ. The flagellum is composed of eleven articles and extends a little beyond the peduncle of the second antennæ and a little beyond the postlateral angle of the head. The second antennæ with a flagellum of thirteen articles, extend to the posterior margin of the first thoracic segment.

The first, second, and seventh segments of the thorax are subequal, each being 2 mm. long; the second is 1.5 mm. in length; the fourth, fifth, and sixth are each 3 mm. long. Epimera are present on all the segments except the first, those of the second and third segments not extending beyond the posterior margins of the segments, while those of the last four segments are acutely produced beyond the postlateral angles of the segments, each having two obliquely longitudinal carinæ.

The first five segments of the abdomen are short and subequal, each being about 1.5 mm. long, the first being partly covered by the last thoracic segment. The sixth or terminal segment is 6.5 mm. long : 8 mm. wide at the base, and has three teeth on the posterior margin, the median one being acute, the two lateral ones obtuse, and shorter than the median tooth. The uropoda are about as long as the terminal abdominal segment. The inner branch is wide and has the outer postlateral angle

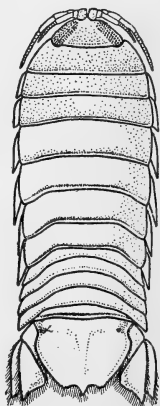


FIG. 15.—*Aega acuticauda*. × 1½.



produced in an acute process, the inner postlateral angle widely rounded. The outer branch is narrow, and rather acutely produced posteriorly. The branches of the uropoda and the margins of the terminal segment of the abdomen are fringed with hairs.

The first three pairs of legs are prehensile, the last four pairs ambulatory.

Only one specimen was obtained, at station 5397, between Samar and Masbate, Bugtun Island, at a depth of 134 fathoms. Type, catalogue number 41011, United States National Museum

This species is similar to *Æga ecarinata* Richardson,<sup>a</sup> from the Atlantic coast of North America.

**Æga magnoculis** Richardson.

*Æga magnoculis* Richardson, Proc. U. S. Nat. Mus., vol. 37, 1909, p. 80-81.

Locality: Stations 5536, Pitt Passage, Gomomo Island, at a depth of 1,262 fathoms, and 5671, Macassar Strait, Chenoki Point, at a depth of 960 fathoms; two specimens.

The specimen from station 5671 has the first two epimera more acutely produced at the outer postlateral angles than any of the specimens heretofore obtained.

**Genus ROCINELA** Leach.

**Rocinela orientalis** Schiødte and Meinert.

*Rocinela orientalis* Schiødte and Meinert, Nat. Tidsskrift (3), XII, 1879-80, p. 395-396, pl. xiii, fig. 1-2. Stebbing, Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, art. xxiii, p. 24-25.

Locality: One specimen from station 5158, Tinakta Island (N.), N. 89° W., 1.90 mi. (5° 12' 00'' N., 119° 54' 30'' E.), at a depth of 12 fathoms, in coarse sand and shells, and another from station 5596.

Semper's specimens were from the Philippine Islands. Schiødte and Meinert's were from Lapenig (1 specimen) Pandanin (1 specimen), and Calcutta (1 specimen). Stebbing's were from off Negombo, off Uluwitti, off Chilaw Paar, and southeast of Modragan Paar.

**Genus SYSCENUS** Harger.

**Syscenus infelix** Harger.

*Syscenus infelix* Harger, Report U. S. Comm. of Fish and Fisheries for 1878, pt. 6, 1880, p. 387-390; Bull. Mus. Comp. Zool., Harvard College, vol. XI, 1883, no. 4, p. 100-102, pl. 3, fig. 5-5a; pl. 4, fig. 3-3h. Richardson, Proc. U. S. Nat. Mus., vol. 37, 1909, p. 85.

Locality: Stations 5621 and 5623, between Gillolo and Makyan Island, at a depth of 272-298 fathoms; two specimens.

This species has been previously recorded from Japan. The terminal abdominal segment is not quite as acute as in the specimens from the Atlantic coast of North America.

**Syscenus intermedius**, sp. nov.

This species in some respects is similar to *Syscenus infelix* Harger, and in other respects is similar to *Syscenus latus* Richardson. It is similar to *S. infelix* in the shape of the head, the general shape of the body, and the segments of the abdomen, but differs in having longer first and second antennæ and in having the terminal segment of the body rounded at the apex, approaching *S. latus* in these characters. The first antennæ, with a flagellum of ten articles, extend to the extremity of the peduncle of the second antennæ. The second antennæ, with a flagellum of twenty-five articles, extend to the posterior margin of the fourth thoracic segment.

Only one specimen was collected, at station 5301. Type, catalogue number 41009, United States National Museum.

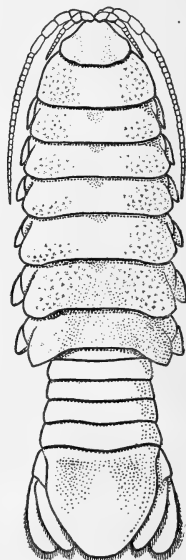


FIG. 16.—*Syscenus intermedius*.  $\times 2\frac{1}{2}$

<sup>a</sup> Proc. Biol. Soc. Washington, vol. XII, 1898, p. 39-40.

## Family CYMOTHOIDÆ.

## Genus ANILOCRA Leach.

*Anilocra dimidiata* Bleeker.

*Anilocra dimidiata* Bleeker, Crust. Ind. Archip., II, 1857, p. 31, fig. 10-10a. Schiødtte and Meinert, Nat. Tidsskr. (3), XIII, 1881-1883, p. 111-113, pl. VIII, fig. 5-6. Stebbing, Willey's Zool. Results, 1902, pt. v, p. 639-640; Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, p. 26.

Locality: Busin Harbor, Burias Island; Maribojoc Bay, Bohol Island; Pasacao, Ragay Gulf. Schiødtte and Meinert's specimens were from the Indian Sea, near Batavia; Stebbing's were from Karuana, British New Guinea, and Palk Bay.

A label accompanying the specimens reads: "Color, dull slaty blue. Attached to nuchal region of *Scolopsis*. H. M. S."

The specimens, three females and three males, have ten articles to the second antennæ, as described by Doctor Stebbing. The first antennæ are geniculate and the dactyli of the first four pairs of legs are swollen in the middle in a nodule. In the males the uropoda extend a little beyond the abdomen, the outer branch being a little longer than the inner branch. The terminal segment of the abdomen also appears a little wider than figured by Schiødtte and Meinert.

A number of young specimens were collected at the same locality as that of the adults, and also at San Miguel Harbor, Ticao Island, by electric light, and Tomindao Island anchorage.

*Anilocra cavicauda*, sp. nov.

Body ovate-elongate, about three and a half times longer than wide, 10 mm.: 36 mm. Color, uniformly dark yellow. Surface smooth.

Head wider than long, 3 mm.: 5 mm., subtriangular, with the front produced in a rounded truncate process. Eyes large, oval, composite, and placed in the postlateral angles of the head. First pair of antennæ composed of eight articles, the first three of which form the peduncle. The first antennæ are geniculate at the articulation of the third and fourth articles, and the third article is dilated with the distal angles projecting beyond the insertion of the fourth article. The first antennæ extend to the posterior margin of the head. The second antennæ are composed of ten articles and extend to the posterior margin of the first thoracic segment.

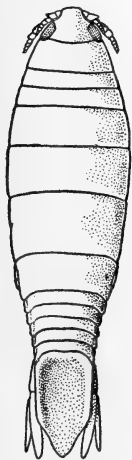


FIG. 17.—*Anilocra cavicauda*.  
× 14.

The first thoracic segment is 2.5 mm. long; the second is 1.5 mm. long; the third is 2 mm. in length; the fourth is 3 mm. long; the fifth 4 mm.; the sixth 5.5 mm.; and the seventh 3.5 mm. Epimera are present on all the segments with the exception of the first; they extend to the posterior margin in the second and third segments; in the fourth and fifth segments they extend almost to the middle of the lateral margin; in the sixth segment they extend just to the middle of the lateral margin; in the seventh segment they extend a little beyond the middle of the lateral margin.

The first five segments of the abdomen are subequal, each being 1 mm. long. They converge slightly from the first to the fifth and have the lateral margins upcurved. The fifth segment has the posterior margin produced on either side near the lateral margin in a long acute process about 1 mm. in length. The sixth or terminal segment is almost twice as long as wide, 5 mm.: 9 mm. The sides converge slightly to within 3 mm. of the extremity, where the width is 4 mm.; from that point they converge rapidly to a pointed extremity. The sides, to within 3 mm. of the extremity, curve

upward, so that the dorsal surface is extremely concave. The inner branches of the uropoda extend to the tip of the abdomen. The peduncle is 3 mm. long and the inner branch 6 mm. The outer branch is 5 mm. long and is also narrower than the inner branch. Both branches are acute posteriorly, the outer branch being slightly more acute than the inner branch.

The first four pairs of legs are short and have the dactylus inflated in the center. The last three pairs gradually increase in length; there is no carina on the bases of any of the legs.

This species is very close to *Anilocra longicauda* Schiøedte and Meinert<sup>a</sup> from Singapore but differs in the longer terminal abdominal segment, which is also differently shaped and concave; in the longer uropoda, the outer branch being shorter, and both being narrower and more acute.

Only one specimen, a female, was taken at Paudanon Island. Type, catalogue number 40936, United States National Museum.

### Genus *LOBOTHORAX* Bleeker 1857.

Synonym, *Saophra* Schiøedte and Meinert.

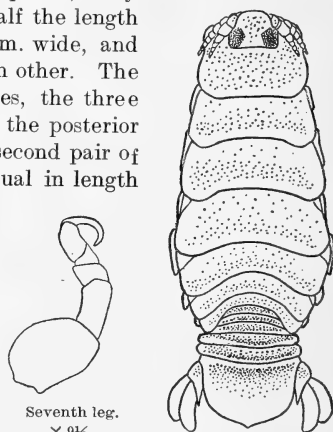
#### *Lobothorax lævis*, sp. nov.

Body ovate, a little more than twice as long as wide, 8.5 mm.:20 mm. The thorax gradually widens from the first segment, which is 5.5 mm., to the fifth segment, which is 8.5 mm. wide. The surface of the body is perfectly smooth. Color yellow, marked with numerous small, black, irregularly shaped dots.

The head is wider posteriorly than anteriorly, being 2.5 mm. wide posteriorly and gradually narrowing to a truncate anterior, which is 1.5 mm. wide. In length the head is 2 mm. The eyes are large, distinct, composite; they are situated in the postlateral angles and extend half the length of the lateral margin, being 1 mm. long and 1 mm. wide, and separated by a distance of only 0.5 mm. from each other. The first pair of antennæ are composed of eight articles, the three first being large and dilated; they extend beyond the posterior margin of the head by the last three articles. The second pair of antennæ are composed of nine articles and are equal in length to the first pair of antennæ.

The first segment of the thorax has the antero-lateral angles produced in a horn-like process on either side, surrounding the head, and extending along its lateral margins to a point halfway between the eyes and the frontal margin. The first four segments are the longest, each being 3 mm. in length, with the exception of the second, which is 2.5 mm. The last three are conspicuously smaller and gradually decrease in length, the fifth being 1.5 mm. long, the sixth 1 mm., and the seventh 0.5 mm. in length. The fifth segment is the widest and the thorax gradually becomes narrower to the seventh segment, which is 6.5 mm. wide. The epimera are narrow plates which do not reach the posterior margins of the segments.

The abdomen is deeply immersed in the thorax. The first five segments together are equal to 3 mm., the last two being slightly longer than the first three. The first two have the lateral parts covered by the seventh thoracic segment. The sixth or terminal segment is 3.5 mm. long and 5.5 mm. wide. It is rounded posteriorly, with



Seventh leg.  
× 9½.

FIG. 18.—*Lobothorax lævis*. × 2½.

<sup>a</sup> Nat. Tidsskr. (3), xiii, 1881-1883, p. 113-116, pl. viii, fig. 7-8.

the apex produced in a point. The outer branch of the uropoda is slightly shorter than the inner branch; both branches are similar in shape, oar-like, with the posterior margins rounded.

All the legs are prehensile, with a high carina on the basis of the last four pairs, which gradually increases in size, being very high on the seventh pair.

Only one specimen, an adult female, was taken, at station 5402, Capitancillo Island Light, S. 37° W., 16.8 mi. (11° 11' 45" N., 124° 15' 45" E.) at a depth of 188 fathoms, in green mud. Type, catalogue number 40935, United States National Museum.

Only two other species of this genus are known, *L. typus* Bleeker and *L. auritus* Schiøedte and Meinert. This species is very close to *Lobothorax auritus* Schiøedte and Meinert<sup>a</sup> from the Philippine Islands, but differs in having the front of the head less triangular and more truncate, in having larger eyes, in having the dorsal surface of the body smooth and not impressed or caniculate, in the longer outer branch of the uropoda and the difference in shape of both branches, and in the smaller size of the species.

### Genus MEINERTIA Stebbing.

#### *Meinertia guttata*, sp. nov.

Body oblong-ovate, 18 mm. long, and 8.25 mm. wide at its greatest breadth. Color yellow and thickly covered with small black dots.

Head triangular in shape, 2 mm. long and 2.5 mm. wide at the base. The eyes are small, round, placed at the sides of the head, about the length of one eye from the posterior margin. The first pair of antennæ are dilated, flattened, composed of seven articles and extend to the posterior margin of the eye. The first three articles are large and subequal, the four following are short. The second pair of antennæ are also dilated and flattened and composed of seven articles. They extend to the posterior margin of the head.

The anterolateral angles of the first thoracic segment extend as far as the posterior margin of the eye. The first segment is longer than any of those following, being 2.5 mm. in length. The following four segments are subequal and each is 2 mm. long; the sixth segment is 1.5 mm.; the seventh 0.5 mm. in length. The thorax increases in breadth from the first segment. The first segment is 4 mm. wide; the second and third are 5.5 mm.; the fourth is 6.5 mm.; the fifth is 8.25 mm.; the sixth 8 mm.; the seventh 6 mm. Epimera are present on all the segments with the exception of the first; the first two are rather long and narrow; the four following are shorter, with the anterior portion broader than the posterior portion, those of the fifth and sixth segments being twice as

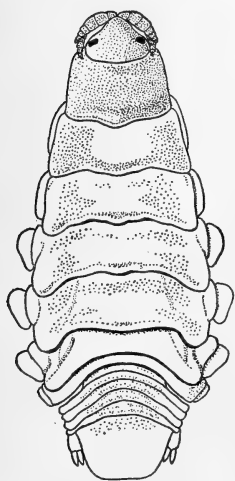


FIG. 19.—*Meinertia guttata*.  $\times 3\frac{1}{2}$

Seventh leg.  $\times 15\frac{1}{2}$

broad anteriorly as posteriorly when viewed laterally.

The abdomen is abruptly narrower than the thorax, the first segment being only 3 mm. wide and deeply immersed in the last segment of the thorax. The second segment is wider, being 4.5 mm. in width, and the three following are nearly as wide. The first five segments are subequal in length and are each about as long as the seventh thoracic segment, 0.5 mm. The sixth or terminal segment is 4 mm. wide at the base and tapers a little to the extremity, which is 3 mm. wide. This segment is 2.5 mm.

<sup>a</sup> *Saophra aurita* Schiøedte and Meinert, Nat. Tidsskr. (3), XIII, 1881-1883, p. 284-286, pl. XI, fig. 3-4.

long. The posterior extremity is slightly excavate in the middle. The uropoda do not reach the extremity of the last abdominal segment; both branches are narrow and short, the inner slightly shorter than the outer.

The legs are all prehensile; there is a carina on the basis of the last four pairs which gradually increases in height; the ischium of these legs is also produced on the inner margin in a wide process.

About 7 specimens of this species, all females, were collected at Jolo, ship's side, by electric light.

This species differs from *Meinertia trigonocephala* (Leach)<sup>a</sup> and *Meinertia oxyrrhyncha* (Koelbel)<sup>b</sup> in the shape of the terminal abdominal segment, the length of the uropoda, the shape of the epimera, and the structure of the legs. It is also a much smaller species than *M. trigonocephala*. This species is similar to *Meinertia huttoni* (Filhol).<sup>c</sup>

Type specimen, catalogue number 40914, United States National Museum.

### *Meinertia parva*, sp. nov.

Body ovate-elongate, a little more than twice as long as wide, 9 mm.: 19 mm. Surface smooth. Color yellow, marked with numerous brown dots, close together.

Head, wider than long, 2 mm.: 3 mm., subtriangular in shape, with the front obtuse. Eyes large, composite, distinct, and placed in the postlateral angles; they are 1 mm. in length, and are separated at their anterior extremities by a distance of 2 mm. The first antennæ are short and are not dilated; they are composed of eight articles and extend to the end of the sixth article of the second antennæ. The second antennæ are composed of eleven articles and reach the anterolateral angles of the first thoracic segment.

The first five segments of the thorax are subequal, each being 2 mm. long; the sixth segment is 1.25 mm. in length; the seventh is 1.5 mm. The anterolateral angles of the first segment are produced forward in rounded processes which extend half the length of the head (1 mm.). The epimera of the second and third segments are narrow plates which extend to the postlateral angles of these segments; the epimera of the four following segments extend about two-thirds of the lateral margins and do not reach the posterior angles of the segments.

The abdomen is deeply immersed in the thorax. The first two segments are the shortest, and are subequal; the three following are nearly subequal, and each is almost twice as long as either of the first two. The first segment, instead of being narrow as is usual in this genus, has the lateral parts extending as far as those of the following three segments and is fully as wide. The fifth segment, however, has the lateral parts concealed by the preceding segment, which is also unusual in this genus. The sixth or terminal segment is 4 mm. long : 6.5 mm. wide and has the posterior margin widely rounded. The branches of the uropoda are short, oval, the inner one slightly longer and narrower than the outer and both shorter than the terminal abdominal segment, not reaching the extremity of that segment by 1 mm.

The legs are all prehensile, and there is a carina, which is not very high, on the basis of the last four pairs.

Only one specimen, a female, was taken, at Opol, Mindanao. Type, catalogue number 40938, United States National Museum.

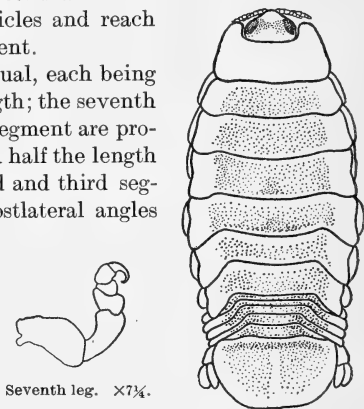


FIG. 20.—*Meinertia parva*. X2½.

<sup>a</sup> See Schiödet and Meinert, Nat. Tidssks. (3), XIII, 1881-1883, p. 358-364, pl. XVI, fig. 1-2.

<sup>b</sup> Idem., p. 368-371, pl. XVI, fig. 10-13.

<sup>c</sup> *Ceratothoa huttoni* Filhol, Mission de l'Ile Campbell, t. III, pt. 2, 1885, p. 446-448, pl. 55, fig. 7, pl. 49, fig. 2.

***Meinertia angulata*, sp. nov.**

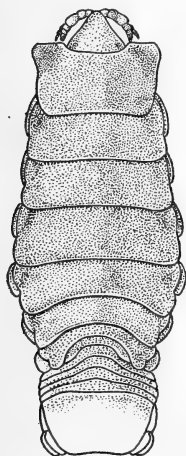
Body oblong-ovate, 20.5 mm. long and 13.5 mm. wide. Surface smooth. Color, bluish, marked with small yellow spots on the sides of the segments.

Head triangular with the apex rounded, 2 mm. long; 2.5 mm. wide at the base. Eyes almost vanishing; first pair of antennæ, composed of seven articles, extend to the posterior margin of the head. All the articles are flattened and somewhat dilated. The second pair of antennæ, composed of eight articles, are not longer than the first pair; the last two articles are minute.

The first segment of the thorax is produced on either side of the head in a rectangular process. These processes extend but a short distance and give the segment a rectangular appearance; they are concave, with the lateral margins upcurved. This segment is a little wider anteriorly than posteriorly, being 6 mm. wide in the region of the anterolateral processes and 5.5 mm. at its posterior extremity. The first segment is 3 mm. long, the second and fourth are each 2.5 mm. in length, the third is 2.75 mm., the fifth is 2 mm., the sixth is 1.5 mm., and the seventh 0.75 mm. long. All except the first are furnished with epimera which do not reach the posterior extremities of the segments, but in the first two extend beyond the anterolateral angles.

The first five segments of the abdomen are short, the first four being about 0.5 mm. each in length, the fifth being almost 1 mm. The first segment is narrow and is deeply immersed in the thorax. The sixth or terminal segment is wider than long, 3 mm.: 5 mm., and has the extremity bilobate, with a slight emargination in the middle. The uropoda are not longer than the extremity of the terminal abdominal segment. Both branches are ovate and about equal in size and length.

The legs are all prehensile, with a carina on the basis of the last four pairs, which is extremely high on the last two.



Seventh leg.  $\times 7\frac{1}{2}$ .

FIG. 21.—*Meinertia angulata*.  $\times 2\frac{1}{2}$ .

Only one specimen was obtained, at Port San Pio, in a small stream near the mouth. Type, catalogue number 41008, United States National Museum.

**Genus RENOCILA Miers.*****Renocila ovata* Miers.**

*Renocila ovata* Miers, Ann. Mag. Nat. Hist. (5), v, 1880, p. 464-465, pl. xv, fig. 11-14. Schiedte and Meinert, Nat. Tidsskr. (3), xiv, 1883-84, p. 416-417.

Locality: Bubuan Island, southwest side. Parasite on tail of snapper.

One specimen, a male, agrees in every respect with Miers's description of this species, except that the body is narrower and the posterolateral angles of the sixth and seventh thoracic segments are more diverging. Miers's specimens were both females. Schiedte and Meinert's specimen from Amboina was also a female.

**Genus CYMOTHOA Fabricius.*****Cymothoa stromatei* Bleeker.**

*Cymothoa stromatei* Bleeker, Acta Soc. Scient. Indo-Neerland., II, 1857, p. 35-36, fig. 13.

*Cymothoa cremita* [Bruennich] Schiedte and Meinert, Nat. Tidsskr. (3), xiv, 1883-84, p. 259-266, pl. VII, fig. 3-13.

*Cymothoa stromatei* Lanchester, Proc. Zool. Soc. London, 1902, vol. 2, pt. 2, p. 377.

Localities: Three females and four males were collected at Bubuan Island, Jolo. One male was collected at Nogas Point, Panay.

A note accompanying seven of the specimens reads: "Parasitic in mouths (gill chamber?) of a barracuda-like fish. The male from Nogas Point was taken from the side of a fish (*Iniustus*).

This species has been collected before in the Sea of Batavia, in the Indian and Pacific oceans, at Madras, Pulo Penang, Singapore, Java, Bangka, Mabatua, Menado, Bohol, "Marineles, Ubay," Legaspi, the Society Islands, and Japan. It has been found on the tongue of *Apolectus niger*, and on *Psettodis erumei*.

### Genus *LIVONECA* Leach.

#### *Livoneca propinqua* Richardson.

*Livoneca propinqua* Richardson, Proc. U. S. Nat. Mus., xxvii, 1904, p. 37-38; Proc. U. S. Nat. Mus., xxxvii, 1909, p. 87.

Locality: Station 5111, Sombrero Island, S. 41° E., 4.50 mi. (13° 45' 15" N., 120° 46' 30" E.), at a depth of 236 fathoms in green mud. Parasite from macrurid. Station 5409, Capitancillo Light, N. 19° W., 22 mi. (10° 38' N., 124° 13' 08" E.), at a depth of 189 fathoms in green mud. One specimen from station 5135 I have referred doubtfully to this species.

#### *Livoneca triangulata*, sp. nov.

Body of adult female oblong-ovate, a little more than twice as long as wide, 5 mm.: 11 mm. Color, in alcohol, yellow, with a few scattered black, star-like markings. The terminal, abdominal segment is without markings, except at the base.

The head is a little wider than long, being 1 mm.: 1.25 mm. It is widely triangular in front. The eyes are large, oval, composite. The first pair of antennae are composed of eight articles and extend two articles beyond the anterolateral angles of the first thoracic segment. The second pair of antennae are also composed of eight articles and extend two articles beyond the first pair of antennae.

The first two segments of the thorax are subequal and each is about 1 mm. long. The following four segments are subequal and each is nearly 1.5 mm. in length. The seventh segment is the shortest and is only about 0.75 mm. Epimera are present on all the segments except the first and are in the form of narrow plates with extremities rounded, reaching two-thirds the length of the lateral margin of the second segment and half the length of the lateral margin in all the following segments.

The first five segments of the abdomen are short and subequal, with the lateral parts produced in acute processes. The first segment is the widest and extends a little beyond the sides of the last thoracic segment. The following four segments gradually become a little narrower. All five segments together only measure a little over 1 mm. in length. The sixth or terminal segment is a little wider than long, 2 mm.: 2.5 mm., and is posteriorly triangular. The branches of the uropoda are similar, subequal, elongate-oval in shape, and do not reach the extremity of the abdomen.

All seven pairs of legs are prehensile and have the basis furnished with a moderately high carina.

Three adult females and one young female were collected at Tonimdao Island anchorage, by electric light. Type specimen, catalogue number 40915, United States National Museum.

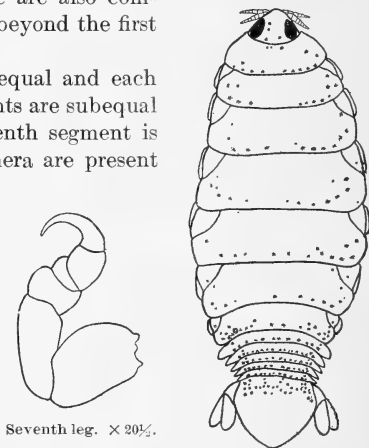


FIG. 22.—*Livoneca triangulata*.  $\times 5$ .

This species is similar to *Livoneca indica* H. Milne Edwards,<sup>a</sup> but differs in the size of the species, the present one being much smaller than *L. indica*; in the shape of the terminal abdominal segment and in the size of the first two epimera.

***Livoneca philippinensis*, sp. nov.**

Body oblong-ovate, twisted a little to the right, nearly twice as long as wide, 8.5 mm.: 16 mm. Color, in alcohol, yellow.

Head wider than long, 1.5 mm.: 2 mm., with the anterior margin widely rounded. Eyes small, round, and situated in the postlateral angles. The first pair of antennæ are composed of six articles and extend two articles beyond the anterolateral angles of the first thoracic segment. The second pair of antennæ are composed of seven articles and are not longer than the first antennæ.

The first, third, and sixth segments of the thorax are subequal in length and each is 1.5 mm. long; the second and seventh segments are subequal and each is 1 mm. long, the second segment being just a little more than 1 mm.; the fourth and fifth segments are each 2 mm. in length. Epimera are present on all the segments except the first, in the form of long, narrow plates, which reach the postlateral angles of the segments in the second, third, and seventh segments. Those of the fourth segment extend a little more than one-half of the lateral margin; those of the fifth segment two-thirds of the lateral margin, and those of the sixth segment three-fourths of the lateral margin.

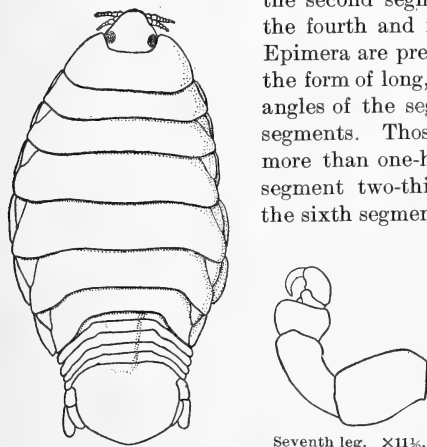


FIG. 23.—*Livoneca philippinensis*.  $\times 3\frac{1}{2}$ .

The first five segments of the abdomen are short and subequal, and all together are but little over 2 mm. in length. The sixth or terminal segment is a little wider than long, being 3.5 mm.: 4.5 mm., and has the posterior margin triangularly rounded. The branches of the uropoda are short, similar, subequal, and do not reach the tip of the terminal segment; they

are oblong-oval in shape. The seven pairs of legs are prehensile. The basis of the last four pairs is furnished with a low carina.

Only one specimen, a female, was collected, at station 5143, Jolo Light, S. 50° W., 3.40 mi. (6° 05' 50'' N., 121° 02' 15'' E.), at a depth of 19 fathoms in coral and sand. Type, catalogue number 40916, United States National Museum.

This species is similar to *L. lunellii* Haller,<sup>b</sup> but differs in the shape of the terminal abdominal segment, the longer uropoda, and the smaller size. It is also similar to *L. sinuata* Koelbel,<sup>c</sup> from the Mediterranean.

***Livoneca frontalis*, sp. nov.**

Body ovate, twisted a little to one side, a little more than twice as long as wide, 9.5 mm.: 20 mm. Surface smooth. Color yellow, with a few black dots on the head and on the lateral margins of the thorax.

Head triangular in shape, 2 mm. long : 2.5 mm. wide at the base, with the front produced in an obtuse extremity. The eyes are small, distinct, black, composite, and placed in the postlateral angles. They are about 1 mm. long by 0.5 mm. wide and are separated by a distance of 1.5 mm. The first antennæ are composed of eight

<sup>a</sup> Hist. Nat. Crust., III, 1840, p. 262. Schiödte and Meinert, Nat. Tidsskr. (3) XIV, 1883-84, p. 362-365, pl. xv, fig. 3-5.

<sup>b</sup> Archiv für Natur-geschichte, I, 46th year, 1880, p. 393, pl. xviii, fig. 11.

<sup>c</sup> See Schiödte and Meinert, Nat. Tidsskr. (3), XIV, 1883-84, p. 378-381, pl. xvi, fig. 7-8.



articles and extend to the posterior margin of the head or to the end of the sixth article of the second antennæ. The second antennæ are composed of twelve articles and extend a little beyond the extremity of the first antennæ.

The first segment of the thorax is the longest, being 2 mm. in length. The following six segments are subequal, each being about 1.5 mm. long. The epimera of all the segments reach the postlateral angles of their respective segments.

The first five segments of the abdomen are subequal, each being about 0.5 mm. long. The sixth or terminal segment is about as long as wide, 5.5 mm. long; 6 mm. wide, and is posteriorly rounded. The branches of the uropoda are subequal in length and width and are 1 mm. shorter than the terminal abdominal segment. They are narrow, with rounded extremities.

The legs are all prehensile with a rather high carina on the basis of the last four pairs.

Only two specimens, a male and a female, were collected, at Balistid, Sablayan. The male differs from the female in having a longer frontal process to the head, which is truncate, in having longer antennæ and longer uropoda.

This species resembles somewhat *Livoneca stewarti* Filhol<sup>a</sup> and *Livoneca raynaudii* H. Milne Edwards,<sup>b</sup> from both of which, however, it is distinct. Type specimen, catalogue number 40937, United States National Museum.

#### *Livoneca*, sp.?

One imperfect specimen of a species of *Livoneca* was collected at Jolo, on the shore.

#### Genus *RHIOTHRA* Schiøedte and Meinert.

##### *Rhiothra callipia* Schiøedte and Meinert.

*Rhiothra callipia* Schiøedte and Meinert, Nat. Tidsskr. (3) xiv, 1883-84, p. 319-324, pl. xii, fig. 8-13. Stebbing, Ceylon Pearl Oyster Fisheries Report, 1905, pt. iv, p. 26-27.

Locality: One specimen, a female, from Mansalay, Mindoro. Taken while dynamiting fish on the reef. Schiøedte and Meinert's specimens were from the Indian Ocean, the islands of Mauritius and Paláos.

The present specimen differs from Schiøedte and Meinert's description of the type in having six articles to the first pair of antennæ and eight to the second pair and in having the inner branch of the uropoda slightly longer than the outer.

#### PLEOPODIAS, gen. nov.

Head slightly immersed in thorax. Eyes distinct. First pair of antennæ with first three articles large, dilated. First antennæ long, extending to the middle of the first thoracic segment. Second antennæ long, extending to the middle of the second thoracic segment.

Thorax with epimera distinct on last six segments.

Abdomen not abruptly narrower than the thorax but somewhat narrower and with the segments, from the first to the terminal, gradually becoming narrower. Ter-

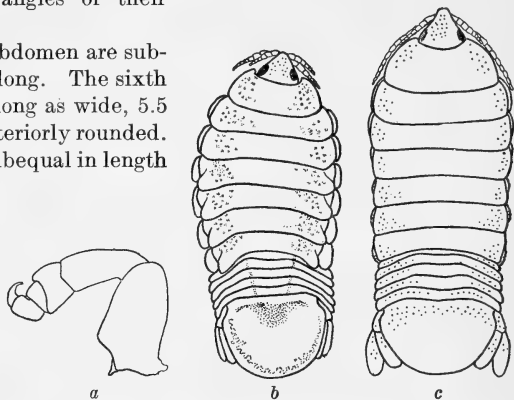


FIG. 24.—*Livoneca frontalis*. a, Seventh leg,  $\times 7\frac{1}{2}$ ; b, female,  $\times 2$ ; c, male,  $\times 4$ .

<sup>a</sup> Institut de France. Academie des Sciences. Passage de Venus sur le soleil du 9 Decembre, 1874. Mission de l'île Campbell, t. iii, pt. 2, no. 1, p. 450-451, pl. lv, fig. 6.

<sup>b</sup> See Schiøedte and Meinert, Nat. Tidsskr. (3), xiv, 1883-84, p. 367-372, pl. xv, fig. 9-13.

minal segment longer than wide and with the posterior margin rounded. Uropoda long and narrow and extending beyond the extremity of the abdomen. The pleopods are large and conspicuous in a dorsal view, and surround the entire abdomen.

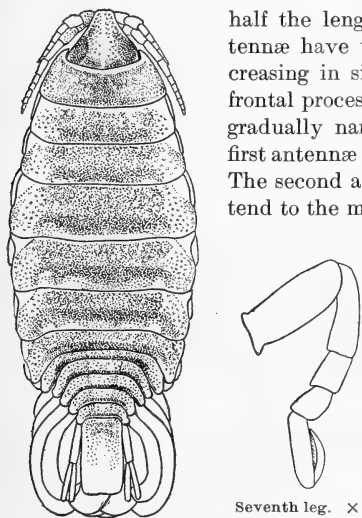
The legs are prehensile, the last pair being abruptly longer than the others, with the merus, carpus, and propodus elongated.

The type of the genus is *Pleopodias elongatus*, new species, the description of which follows.

***Pleopodias elongatus*, sp. nov.**

Body oblong-ovate, a little over 2.33 times longer than wide, 9 mm.: 22.66 mm. Length of head and thorax 16 mm. Color yellow, covered with black and brown arborescent spots, very close together and more or less confluent in the dorsal region of the body.

Head almost as long as wide, 3 mm.: 3.5 mm., triangulate with the front produced in a truncate extremity, which is 1 mm. wide. The eyes are large, oval in shape, and situated in the postlateral angles of the head; they extend half the length of the lateral margin. The first pair of antennae have the first three articles dilated and gradually increasing in size (the first is hidden in a dorsal view by the frontal process of the head); the following five articles become gradually narrower, but all are about equal in length. The first antennae extend to the middle of the first thoracic segment. The second antennae are composed of twelve articles and extend to the middle or a little beyond the middle of the second thoracic segment; the first two articles are short and subequal; the next two are subequal and each is about as long as the first two taken together; the fifth is very long, twice as long as the fourth; the sixth is 1.5 times as long as the fourth and is shorter than the fifth; the following six articles are quite short, each being half as long as the sixth or less than half.



Seventh leg.  $\times 7\frac{1}{2}$ .

FIG. 25.—*Pleopodias elongatus*.  $\times 2\frac{1}{2}$ .

The first three segments of the thorax and the sixth are about equal in length, each being 2 mm. long; the fourth segment is 3 mm. in length; the fifth 2.5 mm., and the seventh 1 mm. The head is slightly immersed in the first segment of the thorax, the anterolateral angles of which extend one-third the length of the eyes. Epimera are present on all the segments with the exception of the first; they are narrow plates, extending to about the middle of each segment.

The abdomen is not abruptly narrower than the thorax, but the segments gradually become narrower from the first to the terminal segment, the first being 6 mm. wide at the base and the sixth segment 2 mm. wide. The last thoracic segment is 8 mm. wide. The first abdominal segment is about half as long as the following four segments. All four segments measure only 3 mm. in length. The sixth or terminal segment is long and narrow, 3.66 mm. long and 2 mm. wide. Its extremity is rounded. The uropods extend about 0.66 mm. beyond the extremity of the terminal segment; the branches are equal in length, about 2 mm. each, and are long and narrow, with parallel sides and rounded extremities. The pleopods are large and conspicuous in a dorsal view, as they extend below the extremity of the abdomen and project at the sides.

The legs are all prehensile, the bases without carinae. Seventh pair abruptly longer than the others and with the propodus, carpus, and merus elongated.

Only one specimen, a female, was collected, at station 5268, Matocot Point, S. 50° E., 5.80 mi. (13° 42' 00" N., 120° 57' 15" E.), at a depth of 170 fathoms, in sand and pebbles. The type is in the United States National Museum, catalogue number 40917.

A number of young *Cymothoidæ* are from the following localities: Romblon, Bongao, Bongao Islands; San Miguel Harbor, Ticao Island; Tomindao Island; Busin Harbor, Burias Island; Panabutan Bay, Mindanao; Port Binanga; Nasugbu, Luzon; and station 5128, Nogas Island (W.) N. 6° E., 32.50 mi. (9° 52' 10" N., 121° 49' 35" E.); Varadero Bay, Mindoro; Port Matoloi, Luzon; Batanavan Island; Endeavor Strait; Sablayan Bay, Mindoro; Mansalay, Mindoro.

Family SPHÆROMIDÆ.

Genus CYMODOCE Leach.

*Cymodoce longistylis* Miers.

*Cymodoce longistylis* Miers, Zool. Coll. of the *Alert*, 1884, p. 305-306, pl. xxxiii, fig. c.

Locality: One specimen, a male, from Tomindao Island anchorage, electric light. Miers's specimens were from Thursday Island, Torres Straits, and Singapore.

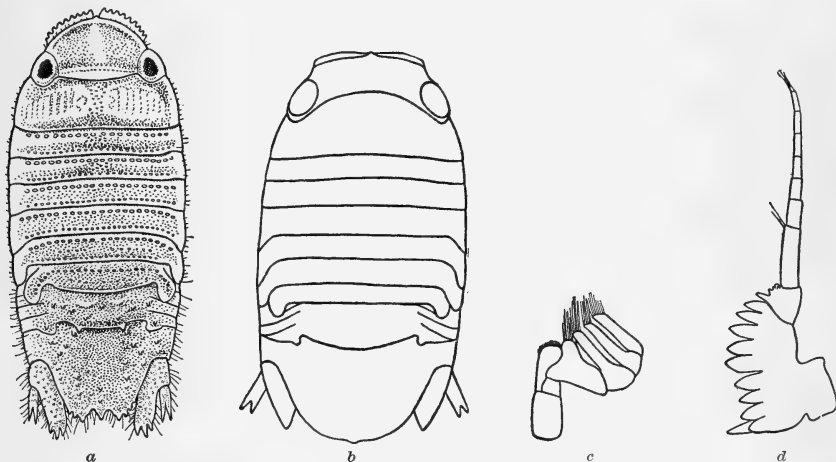


FIG. 26.—*Cymodoce multidens*. a, Male,  $\times 9\frac{3}{4}$ ; b, female,  $\times 14\frac{1}{4}$ ; c, maxilliped,  $\times 27\frac{3}{4}$ ; d, first antenna,  $\times 27\frac{3}{4}$ .

*Cymodoce multidens*, sp. nov.

This species is very close to *Cymodoce tuberculosa* Stebbing,<sup>a</sup> but differs in having the anterior margin of the head produced in one small median point instead of two; in having the first article of the first pair of antennæ furnished with a row of nine teeth instead of five and an additional tooth just anterior to the row, situated at the proximal extremity of the joint; in having one tooth on the second article of the first antennæ; in not having the first abdominal segment produced backward in "two prominent posterior projections,"<sup>b</sup> but in having a small tubercle on either side with another just above it.

Further comparisons of the two species are impossible, because the descriptions of Stebbing, Whitelegge, and Baker differ. Stebbing says the anterior margin of the

<sup>a</sup> Annals and Magazine of Natural History, ser. 4, vol. xii, 1873, p. 95, pl. iii, fig. 1.

<sup>b</sup> See Baker.

head is produced in "two small nostril-like prominences in the center; a lower frontal margin is adorned with ten teeth or turrets, divided into two sets of five, and exhibiting between them a still lower frontal plate with two shining lobes." Baker<sup>a</sup> says, "There are five teeth on the anterior border of the first peduncular joint of the antennule, with a sixth smaller outermost," and "the epistome has two projecting teeth transversely placed on the anterior portion." Whitelegge<sup>b</sup> says, "First antennæ with the basal joint stout, about three times as long as broad, without the marginal denticles."

The male of *Cymodoce multidentis* has two or three teeth on either side of the post-lateral margin of the terminal abdominal segment. These are not shown in Stebbing's figure of *Cymodoce tuberculosa*, nor in Baker's figure, neither are they mentioned in the descriptions of these authors. Whitelegge, however, says, "laterally, the sides are convex, and ornamented with two clusters of small tubercles, those situated distally are seated on a slight, oblique ridge."

The flagellum of the first antennæ is composed of seven articles in *C. multidentis*. Neither Stebbing nor Baker give the number of articles for the flagellum of either the first or second antennæ of *C. tuberculosa*. Whitelegge<sup>b</sup> gives fourteen for the first antennæ and nineteen for the second pair. The second pair in *C. multidentis* have a flagellum of ten articles. The epistome has two long projecting teeth, one on either side of the median line.

The body of the female is smooth, with the posterior margin of the terminal segment rounded, with only a slight indication of the median excavation with its central lobe or tooth. The first article of the peduncle of the first antennæ is not furnished with teeth in the female as it is in the male.

A number of specimens of this species, about forty, males and females, were collected at station 5141 (type locality), Jolo Light, S. 17° E., 5.50 mi. (6° 09' 00" N., 120° 58' 00" E.), at a depth of 29 fathoms, in coral and sand, on the surface of a sepia-brown sponge. One male was taken at station 5145, Jolo Light, S. 16° E., 0.85 mi. (6° 04' 30" N., 120° 59' 30" E.), at a depth of 23 fathoms, in coral and sand and shells.

The type is in the United States National Museum, catalogue number 40918.

The species described by Whitelegge<sup>c</sup> as *Cymodoce inornata* is very similar to the female of *Cymodoce tuberculosa* Stebbing. Whitelegge had but one specimen and that was a female.

### ***Cymodoce japonica* Richardson.**

*Cymodoce japonica* Richardson, Proc. U. S. Nat. Mus., vol. 31, 1906, p. 7-8 (male).

*Cymodoce affinis* Richardson, Proc. U. S. Nat. Mus., vol. 31, 1906, p. 11-12 (female).

*Cymodoce japonica* Richardson, Proc. U. S. Nat. Mus., vol. 37, p. 92, 1909.

Locality: Opol, Mindanao; one specimen.

The tubercles on the surface of the body are more prominent than in the specimens from Japan.

### ***Cymodoce inornata* Whitelegge.**

*Cymodoce inornata* Whitelegge, Mem. Aus. Mus., iv, 1902, pt. 4, p. 263-265.

Locality: Station 5481, between Samar and Leyte, Cabugan Grande Island, at a depth of 61 fathoms; one specimen. Whitelegge's specimen was from Wollongong, Australia.

<sup>a</sup> Trans. Roy. Soc. South Australia, vol. 32, 1908, p. 140-141.

<sup>b</sup> Mem. Aus. Mus., 1902, pt. 4, p. 258.

<sup>c</sup> Op. cit., p. 263-264.

***Cymodoce tripartita*, sp. nov.**

This species is also close to *Cymodoce tuberculosa* Stebbing. The first antennae agree with that species in having a row of five spines on the first article of the peduncle. There is also an additional spine on the lower margin. The anterior margin of the head is also produced in two small points in the middle as in that species, and the first abdominal segment also has the two backward-projecting processes on the posterior portion. It differs, however, from that species in having three teeth on the epistome instead of two and in having the posterior portion of the abdomen different from that species. The median lobe of the posterior margin of the abdomen extends beyond the lateral teeth and is not separated from them by a notch on either side. The median lobe also terminates in a small spine. The median portion of the dorsal surface of the abdomen is raised above the lateral portions in a triangular elevation extending backward from the median terminal lobe. The entire surface of the abdomen is covered with small tubercles, and two larger ones are placed, one on either side, just below the posterior projections of the anterior portion of the abdomen. There are also two larger tubercles on the inner branch of the uropoda, one below the other.

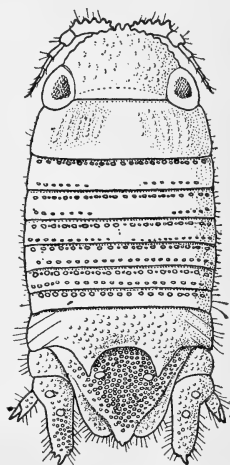


FIG. 27.—*Cymodoce tripartita*.  
Male.  $\times 16$ .

Two males and two females of this species were collected at Jolo, from the interior of a pearl oyster. Type specimen, catalogue number 40919, United States National Museum.

**Genus *CILICÆOPSIS* Hansen.*****Cilicæopsis whiteleggei* (Stebbing).**

*Cilicæa whiteleggei* Stebbing, Ceylon Pearl Oyster Fisheries Report, 1905, pt. IV, p. 39–40, pl. IX (A), (B).

Locality: Station 5158, Tinakta Island (N.), N.  $89^{\circ}$  W., 1.90 mi. ( $5^{\circ} 12' 00''$  N.,  $119^{\circ} 54' 30''$  E.), at a depth of 12 fathoms, in coarse sand and shells. One male. Stebbing's specimens were from Cheval Paar, Gulf of Manaar; off Galle; off Foul Point; Trincomalee, station xxiv.

**Genus *CILICÆA* Leach.*****Cilicæa latreillii* Leach.**

*Cilicæa latreillii* Leach, Diet. Sci. Nat., 1818, XII, p. 342. Desmarest, Consid. gén. Crust., 1825, p. 296, pl. 48, fig. 3. Guérin, Iconogr. Règne Animal, 1836, pl. 30, fig. 4.

*Næsea latreillii* Milne Edwards, Hist. Nat. Crust., 1840, III, p. 218.

*Cilicæa crassicaudata* Haswell, Proc. Linn. Soc. N. S. Wales, 1881, v, p. 475, pl. 17, fig. 3.

*Cilicæa latreillii* Miers, Zool. Coll. Alert, 1884, p. 308.

*Cilicæa crassicaudata* Whitelegge, Mem. Austral. Mus., 1902, IV, p. 273, fig. 35.

*Cilicæa latreillii* Stebbing, Ceylon Pearl Oyster Fisheries Report, 1905, IV, p. 36–39, pl. III (B), VIII.

Localities: Station 5169, Sibitu Island (S. E.), N.  $38^{\circ}$  E., 8 mi. ( $4^{\circ} 32' 15''$  N.,  $119^{\circ} 22' 45''$  E.), at a depth of 10 fathoms, in coral and sand. Station 5174, Jolo Light, E., 2.60 mi. ( $6^{\circ} 03' 45''$  N.,  $120^{\circ} 57' 00''$  E.), at a depth of 20 fathoms, in coarse sand. Station 5141, Jolo Light, S.  $17^{\circ}$  E., 5.50 mi. ( $6^{\circ} 09' 00''$  N.,  $120^{\circ} 58' 00''$  E.), at a depth of 29 fathoms, in coral and sand. Two males and two young specimens.

**BOTRYIAS, gen. nov.**

Head without eyes. Frontal margin produced in the middle in a process continuous with the frontal lamina, which is produced anteriorly in two long, rounded processes. Maxillipeds with the fourth, fifth, and sixth articles produced into lobes or processes.

Lateral parts of seventh thoracic segment not produced in processes as those of the preceding segments.

Abdomen composed of two segments, the last triangular with posterior margin rounded, entire. Uropods with both branches of nearly equal length and similar in shape.

Legs similar, ambulatory.

Last two pairs of pleopods (fourth and fifth pairs) similar in appearance, of fleshy aspect, with neither branch two-jointed.

The type of the genus is *Botryias fructiger*, sp. nov.

**Botryias fructiger**, sp. nov.

Body ovate, almost twice as long as wide, 3.5 mm.:6 mm. Surface of body covered with large tubercles, each one surmounted with a cluster of small bodies having a stem or peduncle and a flat round disk on top. Color yellow, with thorax and head orange. The small disk-like bodies are white.

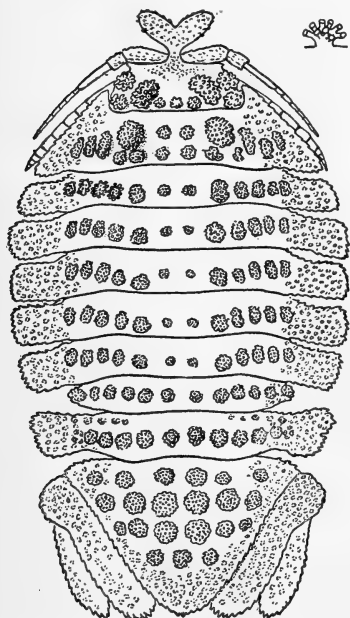


FIG. 28.—*Botryias fructiger*. X 12.

Head wider than long; anterior margin straight, with acute anterolateral angles. Front produced in the middle between the antennæ in a process continuous with the frontal lamina, which projects anteriorly in two elongated rounded processes, one on either side of the median line. Eyes absent. The basal article of the first antennæ is large, about three times as long as wide; the second article is a little more than half as long as the first; the third article is twice as long as the second, and extends almost to the end of the peduncle of the second antennæ. The flagellum, composed of seven articles, extends to the end of the third article of the flagellum of the second antennæ. The second antennæ with a flagellum of nine articles, extends to the postlateral angle of the first thoracic segment. There are nine tubercles on the head, five in a transverse line, one in the median line, and two on either side, the outer ones very large. Lateral

to these are two tubercles on either side. All are surmounted with a cluster of small bodies, composed of a stem or peduncle and a flat, round disk on top.

The first segment of the thorax is a little longer than any of the following, which are about equal in length. Each of the segments have a transverse row of twelve tubercles, six on either side of the median line, each surmounted with a cluster of bodies, having a stem or peduncle which is surmounted by a flat, round disk. There are about fifteen to eighteen of these bodies on each tubercle. On the first

segment the lateral tubercles are larger and are not placed in a regular transverse line. The lateral parts of the segments are produced in elongated processes, with straight lateral margins, and are surrounded on all three sides by a fringe of sharp teeth close together. On the dorsal surface of these lateral parts of the segments are numerous small bodies, similar to those on the tubercles. The seventh segment is not produced laterally in processes.

The abdomen consists of two segments, the first of which is short and has a transverse row of ten tubercles, similar to those on the thorax. At the sides, just lateral to the four median tubercles, is an upper transverse row of four tubercles on either side and the lateral parts of this segment are produced on either side in an elongated process similar to those of the thorax, but double-lobed on the lateral margin, fringed with teeth and having numerous small bodies on the dorsal surface. The sixth or terminal segment is triangular, with apex rounded. On the dorsal surface are three transverse rows of six tubercles, three on either side of the median line, and a fourth row of three tubercles, one in the median line and one on either side, all similar to those before described. Below the last row of tubercles the dorsal surface is covered with the small disk-like bodies, and the entire margin of the segment is fringed with sharp teeth. The branches of the uropoda are of nearly equal length, the inner, immovable branch being a little wider than the outer branch; they extend to the extremity of the terminal abdominal segment. Both are fringed on all the margins with sharp teeth and have small disk-like bodies on the dorsal surface. They are posteriorly rounded.

All the legs are similar, ambulatory.

The pleopods of the fourth and fifth pairs have both branches similar, of fleshy appearance and without marginal setæ. The exopod of the fifth pair is not two-jointed.

This genus belongs, therefore, to the section of eubranchiate Sphæromidæ of Hansen, but corresponds to none of the described genera.

Only one specimen was collected, at station 5661, Flores Sea, Cape Lassa, at a depth of 180 fathoms. Type, catalogue number 41024, United States National Museum.

## IDOTEOIDEA.

### Family ARCTURIDÆ.

#### Genus ARCTURUS Latreille.

##### *Arcturus cornutus* Beddard.

*Arcturus cornutus* Beddard, Proc. Zool. Soc. Lond., 1886, pt. 1, p. 108; Challenger Report, Zool., vol. 17, pt. 48, 1886, p. 93-94, pl. XIX, fig. 6-12.

Locality: Station 5621, between Gillolo and Makyan Island, at a depth of 298 fathoms, and station 5605, Gulf of Tomini, Celebes, Dodepo Island, at a depth of 647 fathoms. Two specimens. Beddard's specimen was from off Samboangan.

##### *Arcturus parvus*, sp. nov.

Body elongate-ovate, covered with long spines; 8 mm. long : 1.5 mm. wide.

Head with a deep median excavation. Eyes large, round, composed of numerous ocelli. There are two long spines on the anterior portion of the head, between the eyes, one on either side of the median line, and two long ones on the posterior portion, one on either side of the median line, and one small spine on either side of these. The first pair of antennæ have the first two articles subequal, the first somewhat dilated; the third article is elongated, about as long as the first two taken together. The first

two articles of the peduncle of the second antennæ are short and subequal, the first being almost wholly concealed, the second armed with one long spine at its extremity; the third article is elongate and armed with six or eight spines; the fourth article is longer than the preceding and is armed with a series of four or six spines and a spine at the distal extremity; the fifth article is longer than the preceding one and is unarmed. The flagellum is broken.

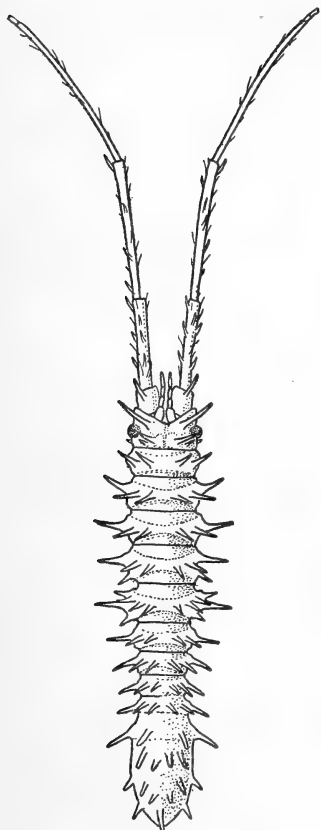


FIG. 29.—*Arcturus parvus*.  $\times 6\frac{1}{2}$ .

All the segments of the thorax are armed each with a transverse row of four long spines, two on either side of the median line. All, except the first, have a long spine on either side close to the lateral margin, near the epimeron. The fourth segment also has one postlateral spine on either side and the fifth segment has two anterolateral spines and one postlateral spine. The total number of spines on the first segment is four; the total number of spines on the second, third, sixth, and seventh segments is six; the total number on the fourth segment is eight, and the total number on the fifth segment is twelve. The lateral margin of the head has two small spines on either side; the lateral margin of the first thoracic segment has three small spines. Each epimeron is produced in one or two small spines.

The first two free segments of the abdomen are furnished each with four spines in a transverse row, two on either side of the median line. The third segment is fused with the terminal segment, and also has four spines in a transverse row, two on either side of the median line, the lateral spines being very long. The last or terminal segment has eight spines on the dorsal surface, four on either side of the median line, and four spines on the lateral margins, two on either side below the transverse median line. The abdomen ends in an obtuse point. Just above this obtuse point

is a long posteriorly directed spine on the dorsal surface.

The legs are also covered with spines.

Only one specimen was obtained, at station 5636, Pitt Passage, Gomomo Island, at a depth of 1,262 fathoms. Type, catalogue number 41016, United States National Museum.

#### ***Arcturus hirsutus* Richardson.**

*Arcturus hirsutus* Richardson, Proc. U. S. Nat. Mus., vol. 27, 1904, p. 41-43; Proc. U. S. Nat. Mus., vol. 37, 1909, p. 97-98.

Locality: Station 5605, Gulf of Tomini, Celebes, Dodepo Island, at a depth of 647 fathoms; one specimen, which I have doubtfully referred to this species.

#### ***Arcturus myops* Beddard.**

*Arcturus myops* Beddard, Proc. Zool. Soc. Lond., 1886, pt. 1, p. 106; Challenger Report, Zool., vol. 17, pt. 48, 1886, p. 100, pl. xxii, fig. 5-8, pl. xxv, fig. 8.

Locality: Station 5664, Macassar Strait, Kapoposang Light, at a depth of 400 fathoms. Beddard's specimens were from off New Zealand.



## ASELLOIDEA or ASELOTOTA.

## Family JANIRIDÆ.

## Genus JANIRA Leach.

*Janira caudata*, sp. nov.

Body oblong-ovate, about 2.5 times longer than wide. Color dark yellow. Surface of body smooth.

Head wider than long, with the anterolateral angles produced; the anterior margin between the lateral angles also triangularly produced, in a wide process, not reaching beyond the lateral angles. Eyes large, composite, round, and situated close to the lateral and posterior margins, a small space intervening. The first pair of antennæ have the basal article large, dilated, and produced at the inner distal extremity in a small, rounded process. The second article is about half as wide and half as long as the first; the third and fourth are subequal and both together about as long as the second; the fifth is a little longer than either of the two preceding; the sixth or terminal article is minute. The first four articles of the second antennæ are short, the third being provided with a scale. The second antennæ are broken at the end of the fourth article.

The seven segments of the thorax have the lateral margins straight, with no indication of epimera.

The terminal segment of the body, the abdomen, has the postlateral angle acute on either side and the posterior margin produced in a long median process rounded at the extremity. The uropoda are lost in the only specimen.

Legs all alike in structure, simple, ambulatory.

One specimen, a male, was collected at station 5218, Anima Sola Island (E.) N. 10° W., 2 mi. (13° 11' 15" N., 123° 02' 45" E.), at a depth of 20 fathoms, in coarse sand. Type, catalogue number 40920, United States National Museum.

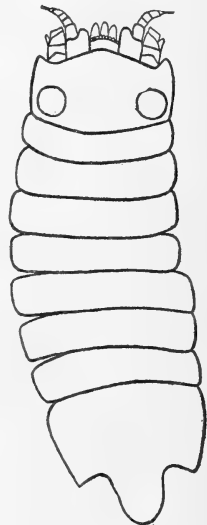


FIG. 30.—*Janira caudata*.  
× 41.

## BOPYROIDEA or EPICARIDEA.

## Family BOPYRIDÆ.

## Genus PROBOPYRUS Giard and Bonnier.

*Probopyrus ascendens* (Semper).

*Bopyrus ascendens* Semper, Die Naturl. Existenzbedingungen der Thiere, I, 1880, p. 181, fig. 38.

*Probopyrus ascendens* Giard and Bonnier, Bull. Scient., XIX, 1888, p. 3, pl. II-III. Max Weber, Zool. Ergebnisse einer Reise in Niederländisch Ost Indien, II, 1892, p. 555. Bonnier, Trav. Station Zool. Wimereux, 1900, p. 345-346.

Locality: Amboina market; Amboina stream; two specimens. Giard and Bonnier's specimens were from the island of Amboina. Semper's specimens were found in the Philippines.

**MEROCEPON**, gen. nov.

This genus is very close to *Cancricepon* Giard and Bonnier, but differs in having three median dorsal bosses, one on the fifth, one on the sixth, and one on the seventh thoracic segment. In *Cancricepon* there are four dorsal bosses. In *Grapsicepon* Giard and Bonnier and in *Portunicepon* Giard and Bonnier there are two. In *Trapezepon*

Bonnier there are no dorsal bosses. In *Tylokepon* Stebbing there are bosses on the last two thoracic segments, but that of the sixth segment is trifid. In *Scyracepon* Tattersall there are six bosses, one on each of the last six segments of the thorax. In *Cardicepon* Nobili there is one large median boss on the sixth thoracic segment.

This genus is closer to *Scyracepon* Tattersall than to any of the other genera mentioned. It differs, however, from that genus, in having but three median dorsal bosses on the thorax of the female, in having the outer branches of the first pair of pleopoda leaf-like and much larger than any of the other branches, and in having the abdomen of the male distinctly segmented.

The type of the genus is *Merocepon xanthi*, new species, the description of which follows.

***Merocepon xanthi*, sp. nov.**

Body of adult female ovate, rather asymmetrical in outline. Color, in alcohol, yellow.

Head large, bilobate in front, and surrounded, except in the posterior part, by a wide border, wider at the sides than in front. Eyes absent. The antennæ are situated on the ventral side and are not visible in a dorsal view; the first pair are minute and seem to be composed of two articles; the second pair are composed of three articles.

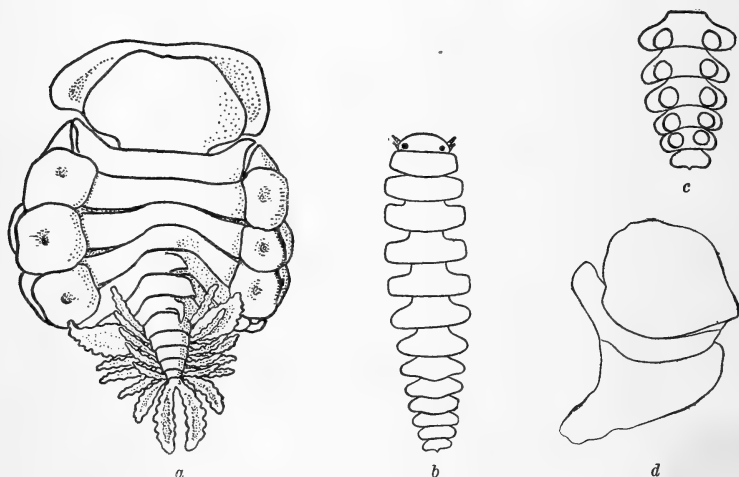


FIG. 31.—*Merocepon xanthi*. a, Female,  $\times 16$ ; b, male,  $\times 27\frac{1}{2}$ ; c, abdomen of male (underside),  $\times 41$ ; d, first lamella of marsupium,  $\times 20\frac{1}{2}$ .

The seven thoracic segments are equal in length in the middle of the dorsal region. The second, third, and fourth have large pleural bosses, rounded and with a small depression in the center. Lateral to these pleural bosses, which are very prominent and conspicuous, are the pleural lamellæ of the segments. The pleural bosses are not present on the first or the last three segments. The last three segments have each a median dorsal boss, that of the sixth segment being the largest, and that of the seventh somewhat hook-shaped.

The first five segments of the abdomen have pleural lamellæ in the form of long, narrow appendages, with tuberculiform margins. The five pairs of pleopods are double branched, with the outer branches elongate and similar to the pleural lamellæ of the abdominal segments with the exception of the first, which are leaf-like; the inner branches are small and difficult to see. The uropoda consist of a pair of elongate lamellæ similar to the pleural lamellæ of the abdomen.

The marsupial plates are large, bounding a large cavity, and overlapping on the ventral side so as to completely cover the eggs. The seven pairs of legs are small and feeble.

The male is narrow, elongate. The head has the anterior margin rounded; eyes distinct and situated in the postlateral angles.

The seven segments of the thorax are distinct, with the lateral margins rounded and not contiguous, but widely separated.

The six segments of the abdomen are distinct, with lateral margins rounded, separated at the sides, and gradually becoming narrower to the last, which is produced posteriorly in a small median triangular process. There are five pairs of small, rounded, sac-like pleopoda.

Only one specimen was collected, by Dr. Paul Bartsch at Tileg Lubang Island. It was taken from the branchial cavity of *Phymodius unguulatus* (Milne Edwards). Type, catalogue number 40921, United States National Museum.

#### Genus *CRYPTIONE* Hansen.

##### *Cryptione lævis*, sp. nov.

Body of adult female ovate, more or less asymmetrical in outline. Color, in alcohol, yellow.

Head deeply immersed in the first thoracic segment, bilobed in front and with a wide border on the anterior portion. Eyes absent. The first pair of antennæ have the first article large and dilated; the two following articles minute. The second antennæ are composed of four articles.

All seven segments of the thorax are distinct. Lateral bosses are present on the first four segments. Lateral to these are the pleural plates, which are present on all seven segments, occupying the entire lateral margin in all but the second and third. On one side of the body the pleural plates of the first four segments are wider than on the other side.

The six segments of the abdomen are distinct, short pleural lamellæ being present

on all except the last. There are five pairs of smooth double-branched pleopoda, the inner branch of each pair being leaf-shaped; the outer branch having two lobes, being V-shaped. The uropoda consist of a pair of short leaf-like lamellæ attached to the terminal segment of the abdomen.

The marsupial cavity is not completely inclosed by the five pairs of lamellæ.

The male is narrow, elongate. The head is large, transversely oval, without eyes. All seven segments of the thorax are distinct, with the lateral margins not contiguous, but separated. All six segments of the abdomen are distinctly separated, the last one being small and provided with a pair of small, short, rounded appendages, the uropoda. On the ventral side are five pairs of simple sac-like pleopoda, a pair for each of the first five segments of the abdomen.

Two males and three females of this species were collected, at station 5110, Corregidor Light, at a depth of 135 fathoms, and station 5121, Malabrigo Light, N. 14° W., 9 mi. (13° 27' 20" N., 121° 17' 45" E.), at a depth of 108 fathoms, in dark-green mud. Type specimen, catalogue number 40922, United States National Museum.

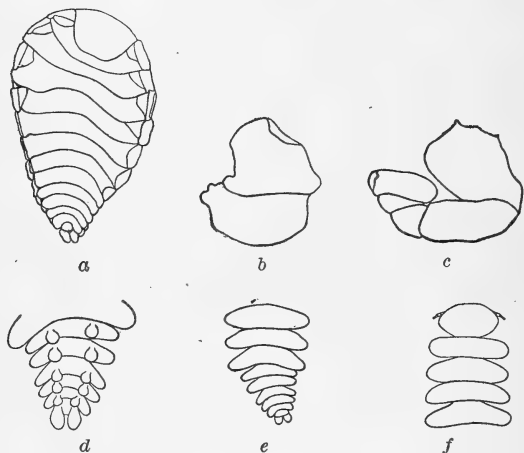


FIG. 32.—*Cryptione lævis*. a, Female,  $\times 4$ ; b, first lamella of marsupium,  $\times 9$ ; c, seventh leg of female,  $\times 27$ ; d, abdomen of male (under side),  $\times 20$ ; e, posterior half of male,  $\times 11$ ; f, anterior half of male,  $\times 11$ .

This species differs from *Cryptone elongata* Hansen<sup>a</sup> in having the pleopoda of the female not tuberculate, but smooth, and the outer branches differently shaped, in the differently shaped distal half of the first lamellæ of the marsupium and in the appearance of the terminal abdominal segment of the male.

Genus **MUNIDION** Hansen.

**Munidion laterale**, sp. nov.

Body of adult female somewhat asymmetrical, nearly twice as long as wide, 8.5 mm.: 16 mm. Color, in alcohol, yellow.

Head large, deeply immersed in the first thoracic segment and with a rather wide border on the anterior portion. Eyes absent.

The seven segments of the thorax are distinct. Lateral bosses are present on the first four segments. All seven segments have pleural lamellæ, which extend the entire length of the lateral margin.

All six segments of the abdomen are distinct, the terminal segment being small and triangular in shape. The first five have the pleural lamellæ well developed, leaf-like; the sixth segment has no pleural lamellæ. There are five pairs of double-

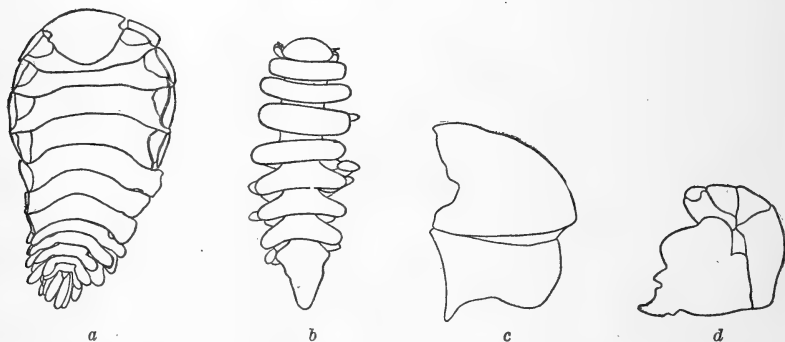


FIG. 33.—*Munidion laterale*. a, Female,  $\times 2\frac{1}{2}$ ; b, male,  $\times 9\frac{3}{4}$ ; c, first lamella of marsupium,  $\times 7\frac{1}{4}$ ; d, seventh leg of female,  $\times 15\frac{1}{2}$ .

branched pleopoda with leaf-like lamellæ. The uropoda are biramous, the branches long and subequal. The five pairs of incubatory lamellæ do not quite meet on the ventral side, but leave a small opening.

The legs are all prehensile and have the basis furnished with a high carina.

The male is narrow, elongate. The head is small, transversely oval, and without eyes. All seven segments of the thorax are distinct. The segments of the abdomen are fused in a single piece, the sides of which are somewhat sinuous. There are no pleopoda or uropoda.

One male and one female were collected, at station 5247, Dumalag Island (S.) S.  $78^{\circ}$  W., 4 mi. ( $7^{\circ} 00' 00''$  N.,  $125^{\circ} 137' 00''$  E.), at a depth of 135 fathoms, in mud. They were found in the branchial cavity of a galatheid. Type specimen, catalogue number 40923, United States National Museum.

This species differs from *Munidion princeps* Hansen<sup>b</sup> in the form of the lateral bosses, in the smaller pleural lamellæ of the abdomen, which do not conceal the abdominal segments dorsally, in the differently shaped distal half of the first lamella of the marsupium, and in the differently shaped abdomen of the male.

<sup>a</sup> Bull. Mus. Comp. Zool., Harvard College, vol. xxxi, no. 5, 1897, p. 112-115, pl. III, fig. 5-5a; pl. IV fig. 1-1g.

<sup>b</sup> Bull. Mus. Comp. Zool., Harvard College, vol. xxxi, no. 5, 1897, p. 115-117.

Genus **PSEUDIONE** Kossmann.**Pseudione fibriata**, sp. nov.

Body of adult female oblong-ovate, more or less asymmetrical, 8 mm.: 14 mm. (including abdominal appendages). Color, in alcohol, yellow.

Head large, deeply immersed in the first thoracic segment and with a rather wide frontal border. Eyes absent. First pair of antennae composed of three or four articles, the first of which is the largest; second pair of antennae composed of five articles.

All seven segments of the thorax distinct. Lateral bosses are present on the first four segments. Lateral to these are the pleural plates, which occupy the anterior half of the lateral margin and are drawn out in irregular branching processes. The posterior half of the lateral margin is also drawn out in numerous finger-like processes. The last three segments have the lateral margins produced in finger-like processes, which in turn are branched.

All six segments of the abdomen are distinct, the sixth or last segment being very small. The first five are provided with large leaf-like pleural plates, which are tuberculate. The sixth segment has no pleural plates. There are five pairs of double-branched leaf-like pleopoda, the margins and surfaces of which are tuberculate. The uropoda are attached to the terminal segment and consist of a pair of simple leaf-like appendages, also tuberculate.

The five pairs of incubatory plates overlap in the middle of the ventral side of the thorax and completely inclose the marsupial cavity. The seven pairs of legs are prehensile and have the basis furnished with a high carina.

Two males in the cryptoniscian stage and one immature male probably in the microniscus stage were taken. Only one adult specimen, a female, was collected, at station 5126, Nogas Island (W.) S. 26° 30' E., 11.75 mi. (10° 34' 45'' N., 121° 47' 30'' E.), at a depth of 742 fathoms, in soft green mud. Type, catalogue number 40924, United States National Museum.

**Pseudione retrorsa**, sp. nov.

Body of adult female oblong-ovate, 9 mm.: 14 mm. (including abdominal appendages). Color, in alcohol, yellow.

Head deeply immersed in the first thoracic segment and with a narrow frontal border becoming wider at the sides. Eyes absent. First pair of antennae composed of four articles; second pair composed of five articles.

All seven segments of the thorax distinct. Lateral bosses are present on the first four segments. Lateral to these are the pleural plates, which occupy only about half of the lateral margin. The pleural plates of the last three segments occupy almost the entire lateral margin.

All six segments of the abdomen are distinct, the sixth or terminal segment being very small and rounded posteriorly. Pleural plates are developed on the first five segments, but are not present on the sixth. There are five pairs of double-branched

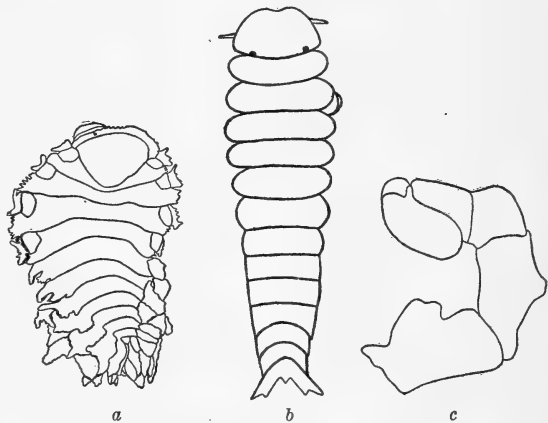


FIG. 34.—*Pseudione fibriata*. a, Female,  $\times 2\frac{1}{2}$ ; b, microniscus stage,  $\times 41$ ; c, seventh leg of female,  $\times 20\frac{1}{2}$ .

pleopoda, the branches being leaf-like and elongate, extending a considerable distance beyond the pleural lamellæ of the abdomen. The uropoda consist of a pair of elongated appendages, attached to the terminal abdominal segment and reaching to the extremity of the branches of the uropoda. The five pairs of incubatory plates overlap in the median line on the ventral side so as to completely inclose the marsupial cavity. All seven pairs of legs are prehensile and have the basis furnished with a high carina.

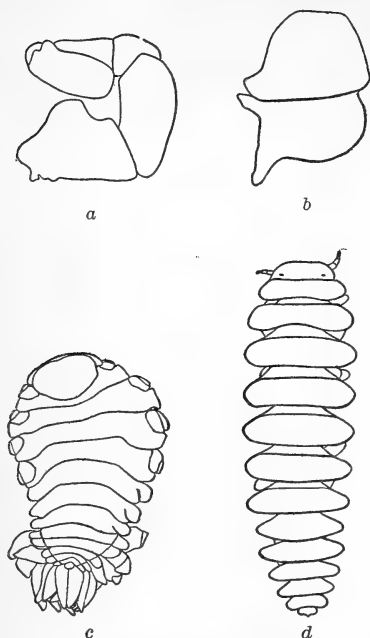


FIG. 35.—*Pseudione retrorsa*. a, Seventh leg of female,  $\times 20\frac{1}{2}$ ; b, first lamella of marsupium,  $\times 7\frac{1}{2}$ ; c, female,  $\times 2\frac{1}{2}$ ; d, male,  $\times 9\frac{1}{2}$ .

The male is narrow, elongate. Head with the anterior margin rounded. Eyes small, distinct. All seven segments of the thorax distinctly separated, with lateral margins not contiguous. All six segments of the abdomen distinctly separated. Last segment small, and with a small, median triangular point on the posterior margin. There are no pleopoda, but on the ventral side of the first five segments is a thickening of the surface on either side of the median line. There are no uropoda.

One male and one female were collected, at station 5124, Point Origen, S.  $56^{\circ}$  E., 20.75 mi. ( $12^{\circ} 52' 00''$  N.,  $121^{\circ} 48' 30''$  E.), at a depth of 281 fathoms, in soft green mud. They were found in the branchial cavity of a galatheid. Type specimen,

catalogue number 40925, United States National Museum.

#### *Pseudione incerta*, sp. nov.

Body asymmetrical, surface smooth.

Head somewhat bilobate; frontal margin narrow, produced at either side in acute anterolateral angles. Eyes absent. First pair of antennæ short, composed of about two or three articles; second pair of antennæ composed of five or six articles.

First and second segments of thorax extremely short in the middle of the dorsal surface. First four segments provided with lateral bosses; lateral to these the anterior margin, as well as the posterior margin, is produced in a process or lobe. The last three segments are also each produced in a lateral process.

All six segments of the abdomen are distinct, with lateral parts not much produced. Each is provided with a pair of double-branched pleopoda, the inner branches being not much smaller than the outer branches in the first three, but exceedingly small in the last two pairs, while the outer branches are as large as those of the first three pairs. The uropoda are a pair of simple elongate lamellæ, similar in size and shape to the outer branches of the pleopoda, but differing in the possession of a small acute process on the inner side of the lateral margin near the base.

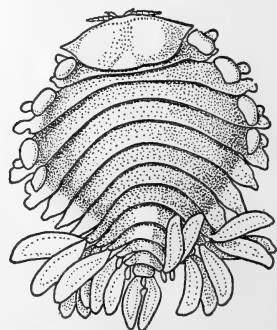


FIG. 36.—*Pseudione incerta*.  $\times 6$ .

There are five pairs of incubatory plates, which do not entirely enclose the marsupial pouch. The first pair have the distal half produced in a rounded process, but the lobe is not defined.

All the legs are prehensile. The male is unknown.

Only two specimens, an adult female and an immature female, were collected at station 5543, north Mindanao and vicinity, Tagolo Light, at a depth of 162 fathoms. Type specimen, catalogue number 41007, United States National Museum.

**PARIONE, gen. nov.**

Body of adult female ovate, rather asymmetrical. Head large, deeply immersed in the first segment of the thorax.

All seven segments of the thorax distinct. Lateral bosses present on the first four. Pleural plates present on all seven segments; on the first four segments they extend only half the length of the lateral margin and are lateral to the lateral bosses; on the last three segments they occupy almost all of the lateral margin.

The six segments of the abdomen are distinct, the last being very small. Pleural lamellæ are present on all but the last segment and are not large. There are five pairs of double-branched pleopoda and a pair of simple single-branched uropoda. The pleopoda and uropoda extend a considerable distance beyond the abdomen.

The male has all seven segments of the thorax distinct. There are but five abdominal segments, the last of which is very small. No pleopoda are present, but on the ventral side of the first four abdominal segments the surface is thickened and elevated on either side of the median line. There are no uropoda.

The type of the genus is *Pseudione paucisecta* Richardson.<sup>a</sup> The second species of the genus is the next described in this paper.

This genus is very close to *Pseudione* Kossmann, but differs principally from that genus in that the male has but five distinct segments to the abdomen instead of six.

**Parione lamellata, sp. nov.**

Body of adult female ovate, more or less asymmetrical. Color, in alcohol, pale yellow.

Head large, deeply immersed in the first thoracic segment, and with a narrow frontal border, which becomes wider at the sides. Eyes absent. The first pair of antennæ are composed of three articles; the second antennæ of five.

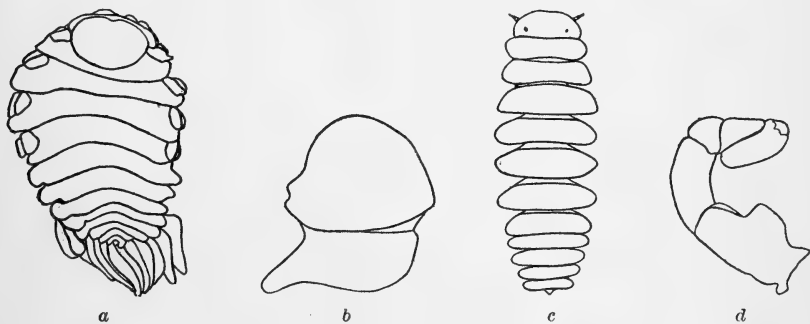


FIG. 37.—*Parione lamellata*. a, Female,  $\times 3\frac{1}{2}$ ; b, first lamella of marsupium,  $\times 9\frac{1}{2}$ ; c, male,  $\times 9\frac{1}{2}$ ; d, seventh leg of female,  $\times 20\frac{1}{2}$ .

All seven segments of the abdomen are distinct. There are lateral bosses on the first four segments. Lateral to these are the pleural plates, which extend only half the length of the lateral margin. The pleural plates of the last three segments are large and occupy almost the entire lateral margin.

The six segments of the abdomen are short and distinctly separated. Pleural lamellæ are present on all except the last, but these lamellæ gradually become smaller. The sixth or terminal segment is very small. There are five pairs of double-branched pleopoda, both branches being large, leaf-like, and tuberculate; they extend a considerable distance beyond the lamellæ of the abdominal segments. The uropoda are attached to the sixth or terminal segment of the abdomen and consist of a pair of long leaf-like appendages as long as the branches of the pleopoda. There are five pairs of incubatory lamellæ, which do not quite enclose the marsupial cavity. The lamellæ are tuberculate. The seven pairs of legs are prehensile and have the basis furnished with a high carina.

The male is narrow, elongate. The head is large, with the anterior margin rounded. Eyes are distinct. All seven segments of the thorax are distinct, with lateral margins not contiguous. The abdomen is short, composed of five segments, the fifth or terminal segment being small and triangular in shape. There are no pleopoda or uropoda, but on either side of the median line on the ventral side there is an elevation and thickening on the first four abdominal segments.

Only two specimens, a male and a female, were collected, at station 5197, Balicasag Island, S. 22 mi. ( $9^{\circ} 52' 30''$  N.,  $123^{\circ} 40' 45''$  E.), at a depth of 174 fathoms, in green mud. Type specimen, catalogue number 40926, United States National Museum.

#### Genus ORBIONE Bonnier.

The uropoda are biramous in the female of this genus and not single-branched as described by Bonnier. This genus differs from *Gigantione* Kossmann, as it also does from *Parapenæon*, in having all six segments of the abdomen of the female lamellate,

while in those genera only five segments of the abdomen of the female are lamellate. It also differs from *Gigantione* in the appearance of the male, which is figured herein for the first time.

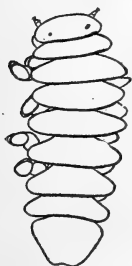


FIG. 38.—*Orbione penei*. Male.  $\times 15\frac{1}{2}$

#### *Orbione penei* Bonnier.

*Orbione penei* Bonnier, Travaux de la Station Zool. de Wimereux, VIII, 1900, p. 280-282, pl. XII.

Locality: Station 5181, Antonia Island (S.), S.  $63^{\circ}$  W., 6.60 mi. ( $11^{\circ} 36' 40''$  N.,  $123^{\circ} 26' 35''$  E.), at a depth of 26 fathoms, in mud and fine sand. Bonnier's specimen was from Hongkong.

A male and a female were collected by the *Albatross* and the male is here figured. Heretofore the male has been unknown.

#### Genus PARAPENÆON Richardson.

The uropoda are biramous in the female of this genus and not single-branched as heretofore stated, agreeing in this respect with *Orbione* Bonnier as amended (see above). It differs, however, from *Orbione* in having the abdomen of the female with five segments lamellate, while in *Orbione* the abdomen of the female has six segments lamellate. The female of *Parapenæon* differs from the female of *Pleurocrypta* in having the uropoda biramous (they are single-branched in *Pleurocrypta*) and in having pleura developed on the segments of the thorax.

The female of this genus is similar to the female of *Gigantione* Kossmann, but the male differs from the male of that genus in having all the segments of the pleon united and not distinct as in *Gigantione*, and in the absence of pleopoda and uropoda, which are well developed in the male of *Gigantione*.



**Parapenæon bonnieri** (Nobili).

*Orbione bonnieri* Nobili, Atti R. Accad. Sc. Torino, vol. 41, 1906, p. 1102-1104, fig. 2.

Locality: Station 5165, Observation Island, N. 70° W., 6.40 mi. (4° 58' 20'' N., 119° 50' 30'' E.), at a depth of 9 fathoms, in coral; one specimen. Nobili's specimen was from Singapore.

In the *Albatross* specimen the pleural lamellæ of the abdominal segments of the female are not quite as long as those of Nobili's specimen. Nobili's figure can not be correct, because the uropoda appear as lamellæ of the sixth segment.

## Family DAJIDÆ.

Genus **HOLOPHRYXUS** Richardson.**Holophryxus giardi** Richardson.

*Holophryxus giardi* Richardson, Proc. U. S. Nat. Mus., xxxiii, 1908, p. 690-692; xxxvii, 1909, p. 123.

Locality: One specimen, a female, from Station 5185, Lusanan Light, N. 23° E., 25.50 mi. (10° 05' 45'' N., 122° 18' 30'' E.), at a depth of 638 fathoms, in green mud. The type specimen came from Toporkov Island, Harbor of Nikolski, Bering Island.

Genus **ZONOPHRYXUS** Richardson.**Zonophryxus trilobus**, sp. nov.

This species is very close to *Zonophryxus retrodens* Richardson, but has four instead of three small indentations on the lateral border of the anterior half of the body. The border surrounding the body on the ventral side begins to converge about the middle toward the posterior portion, where it becomes very narrowly rounded. There are four teeth on either side of the median line on the posterior border, which are not visible in a dorsal view. On the dorsal surface are six indistinct lines indicating the coalesced thoracic segments.

Only one specimen, a female, was collected, at station 5259, Caluya Island (S.), S. 73° W., 12 mi. (11° 57' 30'' N., 121° 42' 15'' E.), at a depth of 312 fathoms, in gray mud and globigerina. Host unknown. Type, catalogue number 40927, United States National Museum.

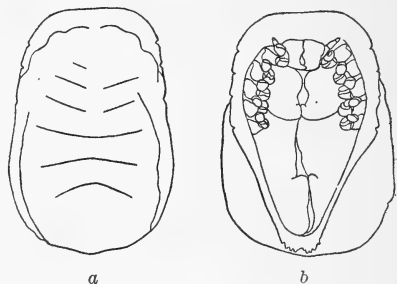


FIG. 39.—*Zonophryxus trilobus*. a, Dorsal view; b, ventral view.  $\times 2\frac{1}{2}$ .

## ONISCOIDEA.

## Family LIGYDIDÆ.

Genus **LIGYDA** Rafinesque.**Ligyda exotica** (Roux).

*Ligia exotica* Roux, Crust. Médit., 1828, p. 3, pl. xiii, fig. 9.

*Ligia gaudichaudii* H. Milne Edwards, Hist. Nat. Crust., iii, 1840, p. 157. Dana, U. S. Expl. Exp., Crust., xiv, 1853, p. 741, pl. XLIX, fig. 6a-h.

*Ligia exotica* Budde-Lund, Crust. Isop. Terrestria, 1885, p. 266-268. Richardson, Proc. U. S. Nat. Mus., xxvii, 1904, p. 49.

*Ligyda exotica* Richardson, Proc. U. S. Nat. Mus., xxxvii, 1909, p. 125-126.

Locality: Kowloon, China, shore; three specimens.

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*DESCRIPTION D'UN NOUVEL ISOPODE*  
DU GENRE *BRAGA*  
PROVENANT D'UNE RIVIÈRE DE L'AMÉRIQUE DU SUD,  
PAR M<sup>lle</sup> HARRIET RICHARDSON.

Extrait du *Bulletin du Muséum d'histoire naturelle*. — 1911, n° 3, p. 94.

Une nouvelle espèce de *Braga* fut récemment découverte par M. Émile Wagner, dans la bouche d'un Poisson d'eau douce. Le spécimen était accompagné de la note suivante : «Petit Crustacé recueilli dans la bouche d'un gros Poisson dit *Armado* <sup>(1)</sup>. Ayant pris cet *Armado* à la ligne de fond, en le retirant de l'eau, plusieurs de ces petits Crustacés s'échappèrent de sa bouche, mais je ne pus en capturer qu'un seul. 10 mars 1910. Villa Lutecia (environs de San Ignacio, Haut Parana).»

***Braga fluviatilis* nov. sp.**

Corps oblong-ovale, environ deux fois et demie plus long que large : 4 millim. 5, 10 millim. 5. Couleur jaune, avec des marques de brun foncé. Surface unie.

Tête aussi large que longue : 2 millimètres, 2 millimètres. Le front s'avance en un long et large processus qui s'étend considérablement au delà des antennes et cache leurs articles basilaires. Le bord antérieur de ce processus s'avance triangulairement, avec sa pointe aiguë fort inclinée vers le bas. Les yeux sont noirs, ovales, de moyenne grandeur et situés à peu près à 1 millimètre l'un de l'autre; ils sont placés dans les angles post-latéraux. Les antennes de la première paire sont composées de sept articles dont les deux derniers dépassent les angles post-latéraux de la tête. Les antennes de la seconde paire, composées de neuf articles, atteignent le bord postérieur du premier segment thoracique.

<sup>(1)</sup> Les Poissons que, dans la République Argentine, on désigne sous le nom d'*Armado* sont des Silures de grande taille, les Platystomes.



Le premier segment du thorax est le plus long, ayant une longueur de 1 millim. 25. Les six segments suivants sont subégaux, chacun d'eux ayant environ une longueur de 0 millim. 75. Tous les segments, à l'exception du premier, sont munis d'étroits épimères qui s'étendent sur toute la longueur du bord latéral, les angles post-latéraux externes de ceux qui appartiennent au cinquième segment étant les plus aigus.

Le premier segment de l'abdomen est le plus court; il mesure un peu moins de 5 millimètres. Les trois segments suivants sont subégaux,

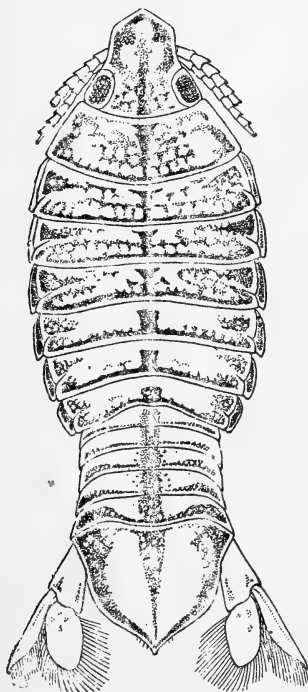


Fig. 1. — *Braga fluviatilis*  
(vue dorsale),  $\times 8$ .

chacun ayant une longueur de 0 millim. 5. Le cinquième segment est un peu plus long, car il mesure environ 0 millim. 75. Les trois premiers ont les bords latéraux avancés en processus longs et aigus dirigés vers le bas et non visibles en une vue dorsale. Le sixième, ou segment terminal, est cordiforme, avec l'apex saillant en une longue pointe très aiguë qui, au sommet, se recourbe vers le bas et apparaît surtout bien en vue latérale; le segment terminal est long de 2 millim. 5 et large à la base de 3 millimètres. Les uropodes sont plus longs que le segment terminal de l'abdomen : leur branche interne est ovale et frangée de longs poils tout autour; la branche externe est presque deux fois aussi longue que la précédente et fait une saillie très aiguë à l'extrémité postérieure; son bord latéral interne est seulement muni de longs poils; son bord externe est droit, son bord interne arqué. Il y a environ quatre ou cinq poils de chaque côté de la pointe médiane du segment terminal de l'abdomen sur son côté postérieur.

Les pattes sont toutes préhensiles; leur basie n'est pas munie d'une carène. Les pléopodes ne sont pas frangés de poils.

M. Émile Wagner n'obtint qu'un seul spécimen, un jeune mâle, qu'il trouva dans la bouche d'un Poisson d'eau douce (dans le Rio Parana ou ses affluents, d'après M. le Professeur Bouvier).

On pourra peut-être établir que cette espèce est le mâle de *Braga nasuta* Schiødt et Meinert, découvert sur les côtes du Brésil; mais il semble plus sage de la considérer comme distincte à cause de la forme différente du front, des antennes plus longues, de la forme un peu différente du





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ISOPOD CRUSTACEAN OF THE FAMILY IDOTHE-  
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BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

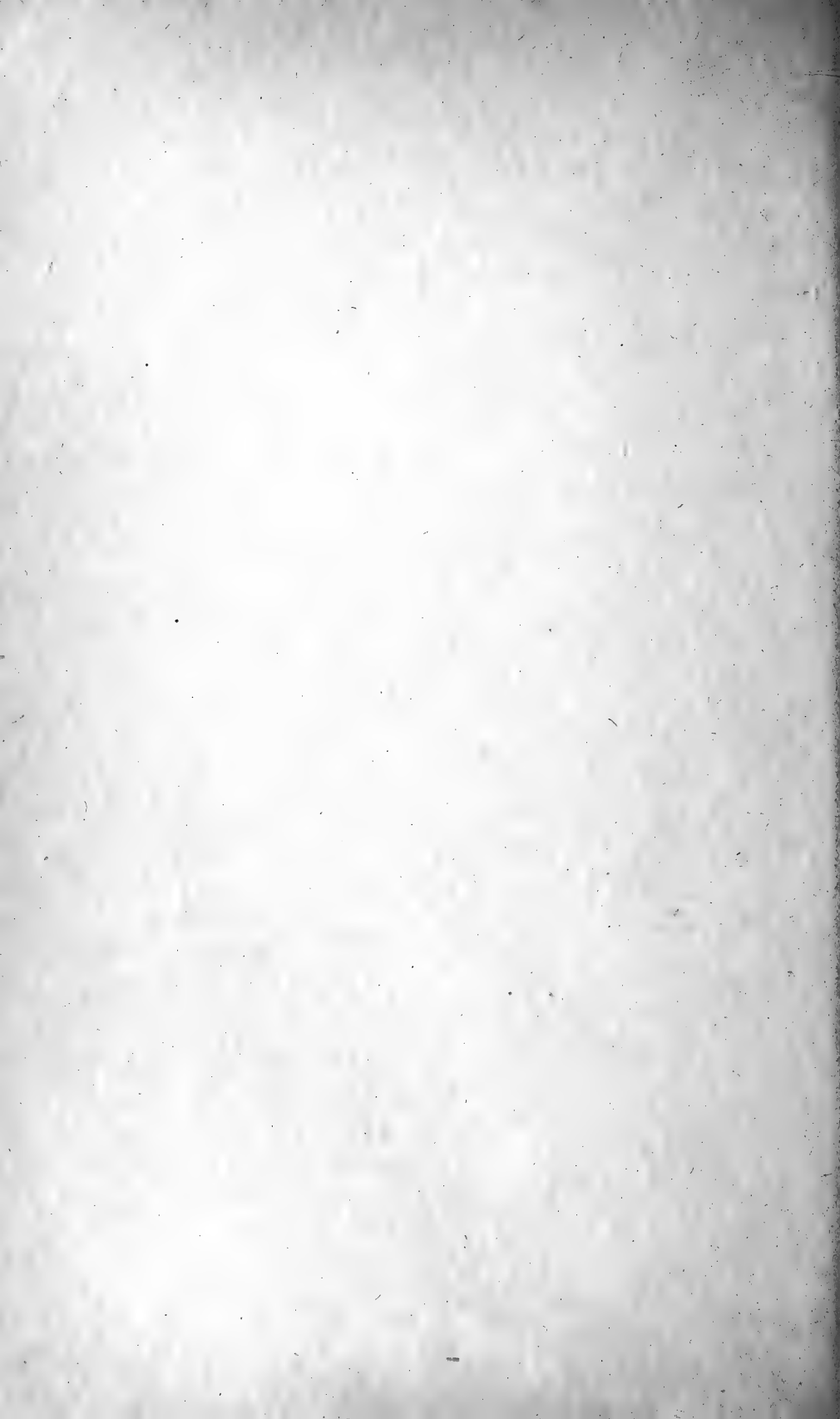
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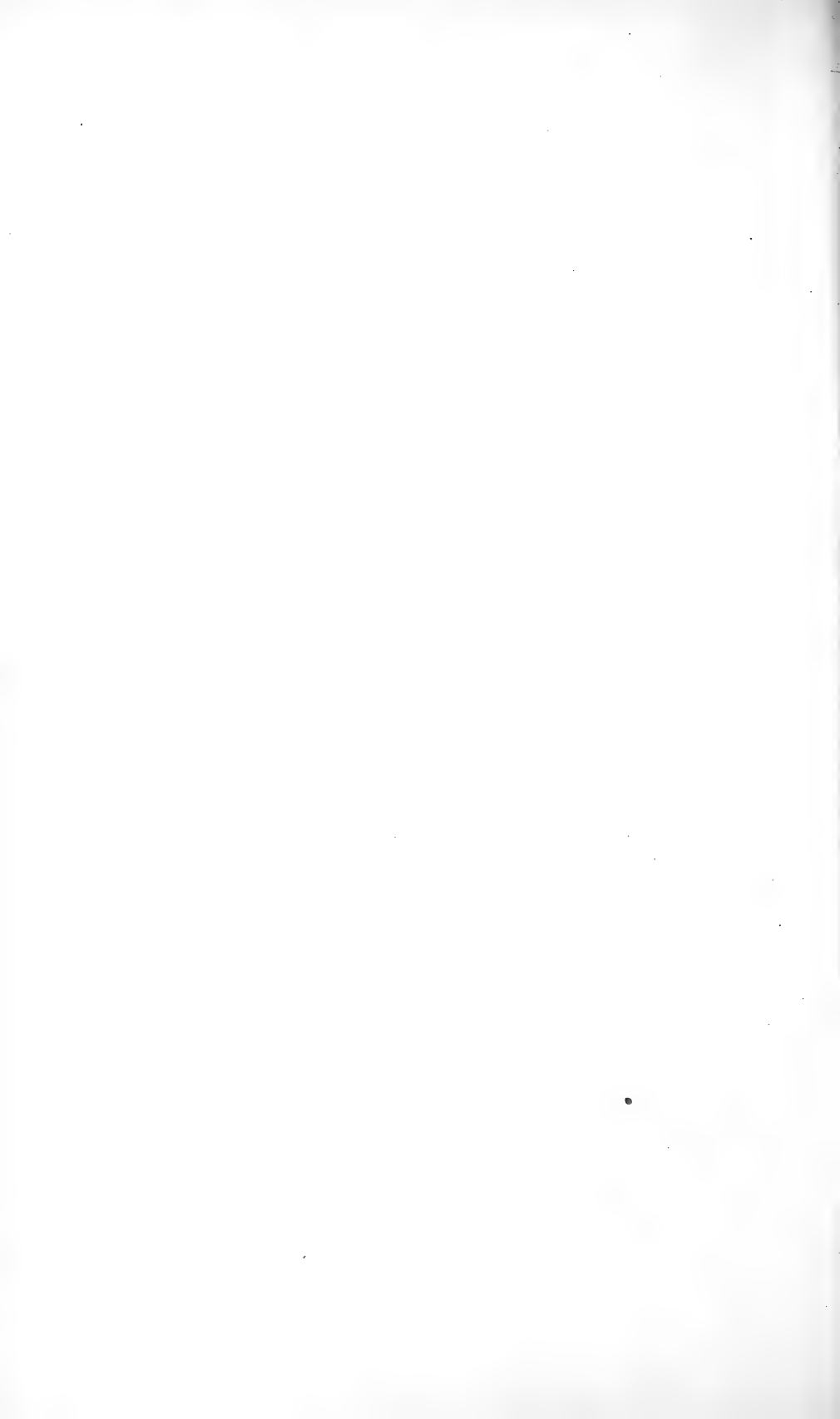
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DESCRIPTIONS OF A NEW GENUS AND SPECIES OF ISOPOD  
CRUSTACEAN OF THE FAMILY IDOTHEIDÆ FROM THE  
MOUTH OF THE RIO DE LA PLATA, ARGENTINA, SOUTH  
AMERICA.

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By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

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In 1888, the U. S. Bureau of Fisheries steamer *Albatross*, while dredging off the coast of South America, obtained a specimen representing a new genus and species of Idotheidæ, the descriptions of which follow.

CHIRISCUS, new genus.

Body ovate. Head large, laterally expanded; lateral margins not cleft. First pair of antennæ with a peduncle of three articles, the second inserted at the outer lateral margin of the basal article; flagellum composed of a single long article and a minute terminal one. Second antennæ concealed by first pair; peduncle composed of five articles and geniculate at the articulation of the second and third articles; flagellum multi-articulate. Maxillipeds with a palp composed of three articles. Segments of thorax, except the first, furnished with distinct epimera. Seventh segment abruptly narrower than the sixth and not wider than the abdominal segments. Abdomen composed of three segments, two short ones anterior to a long terminal segment. First pair of legs strongly prehensile, with propodus large and dilated. Four following pairs and seventh pair similar, with terminal joints furnished with long hairs; these legs have no dactylus. Sixth pair of legs much longer than the others, with the carpus and propodus elongate.

This genus is similar to both *Macrochiridotea* Ohlin<sup>1</sup> and to *Chætulia* Dana.<sup>2</sup> It differs from both, however, in not having the second and third pairs of legs prehensile, and in having no dactylus

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<sup>1</sup>Isopoda from Tierra del Fuego and Patagonia. Svenska Expeditionen till Magellansländerna, vol. 2, No. 11, 1901, pp. 286-291.

<sup>2</sup>U. S. Expl. Exp., vol. 14, 1853, pp. 711-713, pl. 46, fig. 11a-f.

to the last six pairs of legs, with the exception of the sixth pair. It also differs from both genera in having only three segments to the abdomen. It differs further from *Macrochiridotea* in not having the sides of the head cleft and in having the second article of the peduncle of the first antennæ inserted in the outer lateral margin of the basal article. It differs further from *Chætilia* in not having the sixth and seventh pairs of legs jointed and in having the sixth pair less elongate.

The type of the genus is *Chiriscus australis*, new species.

CHIRISCUS AUSTRALIS, new species.

Body ovate, a little more than twice as long as wide, 8 mm. by  $3\frac{1}{2}$  mm. Color, in alcohol, light brown, with a small patch of black on either side of the posterior portion of the head and on either side of the antero-lateral parts of the first thoracic segment; there is also a transverse band of black on the terminal abdominal segment.

The head is twice as wide as long, 3 mm. by  $1\frac{1}{2}$  mm., with the anterior margin produced into a conspicuous median point. The head is deeply immersed in the first thoracic segment, but the lateral parts are produced and expanded in wide plates, the margins of which are entire. The eyes have almost disappeared; they are situated some distance from the lateral margin in the posterior half of the head. The first pair of antennæ have the basal article large and dilated, with the post-lateral margin produced in a small rounded lobe; the second article is

narrow, elongate, about one and a half times the length of the first, and is inserted in the outer lateral margin of the basal article; the third article is about as long as the second; the flagellum is composed of a single large article, about half the length of the third article of the peduncle, and a minute terminal article. The first antennæ extend beyond the post-lateral angles of the head by a distance equal to the length of the flagellum; the second antennæ are extremely short, extending only to the end of the second article of the peduncle of the first

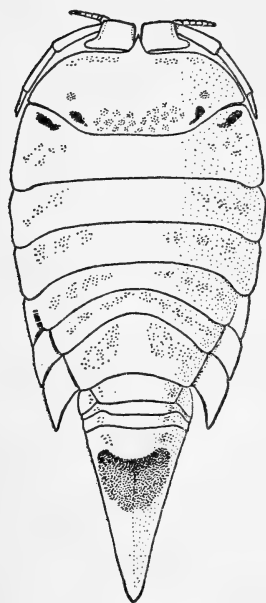


FIG. 1. CHIRISCUS AUSTRALIS.  
× 9.



FIG. 2. CHIRISCUS AUSTRALIS.  
MAXILLIPED. × 20½.



FIG. 3. CHIRISCUS AUSTRALIS.  
FIRST LEG. × 11½.

the post-lateral angles of the head by a distance equal to the length of the flagellum; the second antennæ are extremely short, extending only to the end of the second article of the peduncle of the first

antennæ, and are geniculate at the second article; the first article is short; the second is twice as long as the first; the third and fourth are short, about equal in length to each other and to the first article, the fourth having the outer lateral margin produced in a large rounded process or lobe; the fifth article is a little longer than the preceding; the flagellum is composed of eleven articles. The second antennæ are almost entirely concealed in a dorsal view by the first antennæ.

The first, second, and third segments of the thorax are about equal in length in the median line, being each three-fourths mm. long; the fourth, fifth, and seventh segments are a little shorter, being each about one-half mm. in length; the sixth segment is the longest, being 1 mm. long. Epimera are present on all the segments except the first; they are visible in a dorsal view only on the last three, being wide and occupying the entire lateral margin; in the other three segments they are narrow plates and extend only half of the lateral margin. The thorax tapers toward the posterior extremity, which is narrower than the anterior portion. The seventh segment is abruptly narrower than the sixth segment, and is not wider than the first abdominal segment.

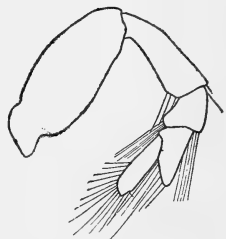


FIG. 4. *CHIRISCUS AUSTRALIS*.  
SECOND LEG.  $\times 20\frac{1}{2}$ .

The abdomen is composed of three segments, two short segments anterior to the long terminal segment. The terminal segment is long and narrow, 3 mm. by  $1\frac{1}{2}$  mm., and tapers to a pointed extremity.

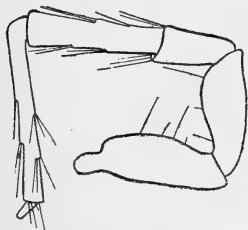


FIG. 5. *CHIRISCUS AUSTRALIS*.  
SIXTH LEG.  $\times 20\frac{1}{2}$ .

The first pair of legs are strongly prehensile, with the propodus large, dilated, and the dactylus long and reflexed. The carpus is produced on the exterior margin in a long spine-like process at the base of the propodus. The two following pairs of legs are not prehensile, but are similar to the fourth, fifth, and seventh pairs, with the exception that the

basis is more dilated and the carpus produced in a long wide process extending half the length of the propodus. In all five pairs, the last three articles are fringed with long hairs, and there is no dactylus. The sixth pair is much longer than any of the others and has the carpus and propodus elongate. This pair has a small blunt dactylus.

Only one specimen was obtained by the *Albatross* at station 2764, off Rio de la Plata, Argentina, at a depth of  $11\frac{1}{2}$  fathoms on sand and broken shells.

*Type*.—Cat. No. 42092, U.S.N.M.













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DESCRIPTION OF A NEW SPECIES OF ÆGA  
FROM THE ATLANTIC COAST OF  
THE UNITED STATES

BY

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# DESCRIPTION OF A NEW SPECIES OF *ÆGA* FROM THE ATLANTIC COAST OF THE UNITED STATES.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, U. S. National Museum.*

A new species of *Æga* was collected by the U. S. Bureau of Fisheries steamer *Albatross* in 1885 off the Atlantic coast of the United States. Only one specimen was obtained, the description of which follows:

## *ÆGA ORNATA*, new species.

Body oblong ovate, twice as long as wide, 8 mm.:4 mm.

Head large, subtriangular, with apex obtuse, about twice as wide as long, a little more than 1 mm. long and a little more than 2 mm. wide. Eyes large, composite, composed of six rows of ocelli on the dorsal side and separated at their anterior extremities by a distance of 0.5 mm. The eyes are also con-

spectuous on the ventral side of the head, showing several rows of ocelli. The first pair of antennæ have the first two articles of the peduncle short and subequal; the third article is three times as long as the second; the flagellum is composed of 11 articles and extends to the post-lateral angle of

the first thoracic segment and a little beyond the peduncle of the second antennæ. The second antennæ have the first two articles of the peduncle short and subequal; the third is as long as the first two taken together; the fourth is twice as long as the third; the fifth is one and one-half times as long as the fourth; the flagellum is composed of 16 articles and extends to the post-lateral angle of the third thoracic segment.

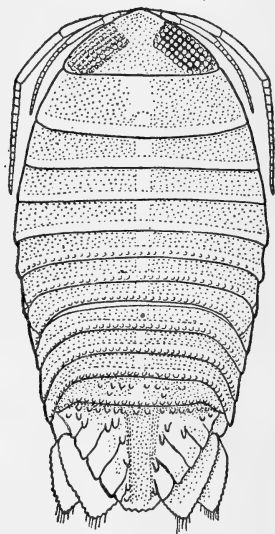


FIG. 1.—*ÆGA ORNATA*.  $\times 8$ .

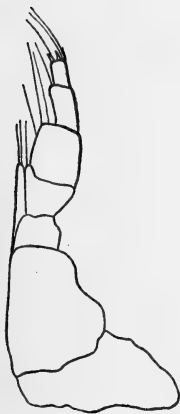


FIG. 2.—*ÆGA ORNATA*.  
MAXILLIPED.  $\times 65\frac{1}{2}$ .

The first segment of the thorax is the longest and is a little more than twice as long as the second; the second, third, and fourth are subequal, each being 0.5 mm. in length; the fifth and sixth are subequal and each is a little shorter than the preceding segment; the seventh segment is the shortest. The last three segments have a row of small tubercles, set close together, on the posterior margin. All the segments except the first are furnished with epimera; those of the second and third segments do not reach beyond the posterior margins of their respective segments and are rounded posteriorly; the last four have the outer post-lateral angle produced, gradually increasing in length to the last, and all extending beyond the posterior margins of their segments; the last three have small tubercles on the posterior margins. All are furnished with a carina.



FIG. 3.—ÆGA ORNATA. FIRST MAXILLA.  $\times 65\frac{1}{2}$ .

The first segment of the abdomen is almost entirely concealed; the following three segments are subequal and each has the posterior margin furnished with a row of small tubercles, set close together; the fifth segment is a little longer than any of the preceding segments and in addition to the row of tubercles on the posterior margin has a few on the dorsal surface about the middle. The sixth or terminal segment is triangulate in shape with the apex truncate and furnished with five small teeth, one in the median line and two on either side. The lateral margins of the segment are incised, the two anterior incisions extending only a short distance from the lateral margin, but the three posterior ones extend to the sides of the median furrow. The upper end of each incision is marked by a tubercle on the posterior side; there is also one on the anterior side of the first and third incisions at the upper end. A row of small tubercles is also placed at the base of the segment, extending from one side to the other. The inner branch of the uropoda is a little longer and wider than the outer branch and extends a little beyond the extremity of the abdomen. Both branches are rounded posteriorly and crenulate. The first three pairs of legs are prehensile, the last four pairs ambulatory.



FIG. 4.—ÆGA ORNATA. SECOND MAXILLA.  $\times 124$ .

Only one specimen was obtained by the *Albatross* in 1885 from the Atlantic Ocean off the southern coast of the United States. It was found parasitic on the Red Porgy (*Pagrus pagrus*).

The type is Cat. No. 42377, U.S.N.M.







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# DESCRIPTIONS OF A NEW GENUS AND SPECIES OF JANIRIDÆ FROM THE NORTHWEST PACIFIC

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, U. S. National Museum

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No. 1843.—From the Proceedings of the United States National Museum,  
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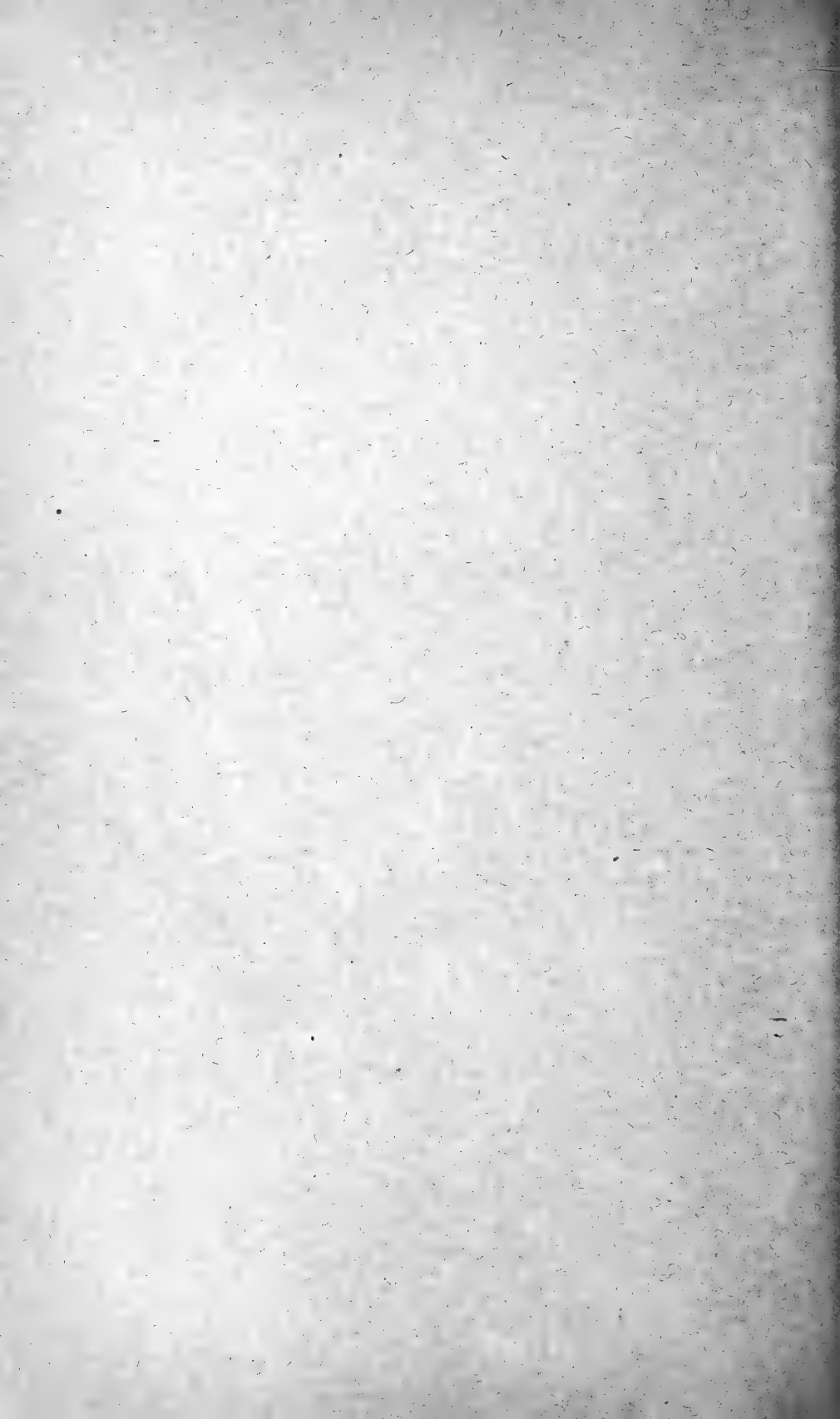
Published June 7, 1911



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By HARRIET RICHARDSON,

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In the material collected by the U. S. Bureau of Fisheries steamer *Albatross* in the Northwest Pacific in 1906 there was a single specimen representing a new genus and species of Janiridæ. This specimen has only recently turned up, so was not included in my earlier report<sup>1</sup> on the isopoda of that collection.

### JÆRELLA, new genus.

Head produced in the middle of the front in an extremely long rostrum. Antero-lateral angles also produced in an extremely long process on either side. Lateral margins of head produced on either side in an elongate process. Eyes large, conspicuous and situated some distance from the lateral margin.

First segment of the thorax produced on either side in a single long triangular process, similar to the lateral process of the head. The following six segments have the lateral margins produced on either side in two narrow elongate processes, equal in length to the lateral process of the first segment.

Abdomen consisting of a single large segment, the posterior margin of which is produced in two long processes, posteriorly directed, and the lateral margins of which are furnished on either side with a single long triangular process. Uropoda, with a short peduncle and two slightly unequal branches, are placed between the two posterior processes of the abdomen.

Head, first three and last three segments of the thorax ornamented with two sharp spines, one on either side of the median line. Fourth segment of thorax furnished with four spines, two on either side of the median line, in longitudinal series. There is one spine on the anterior portion of the abdomen in the median line.

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<sup>1</sup> Proc. U. S. Nat. Mus., vol. 37, 1909, pp. 75-129.

The legs of the first pair are prehensile, of the following six pairs ambulatory.

The type of the genus is *Jærella armata*, new species.

This genus is closer to *Iolella* (as represented especially by *I. spinosa* (Harger), *I. speciosa* (Bovallius), and *I. glabra* Richardson) than to any other genus of the family, but differs from it in having the antero-lateral angles of the head as well as the lateral margins produced in triangular processes; in having the last three segments of the thorax produced in two elongate processes instead of one; in having the abdomen produced in two posterior triangular processes and two lateral triangular processes instead of the two posterior triangular expansions found in that genus; and in having four spines on the fourth segment of the thorax. This genus may also be compared with *Rhacura* Richardson,<sup>1</sup> *Acanthaspida* Stebbing,<sup>2</sup> *Iolanthæ* Beddard,<sup>3</sup> and *Ianthopsis* Beddard.<sup>4</sup>

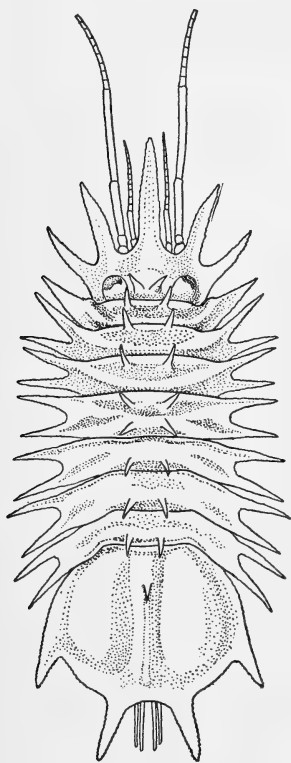


FIG. 1.—*JÆRELLA ARMATA*.  $\times 11$ .  
(Drawn by Miss V. Dandridge.)

*JÆRELLA ARMATA*, new species.

Body oblong-ovate.

Head with anterior margin produced in the middle in an extremely long rostrum, ending acutely. Antero-lateral angles also produced forward in extremely long processes, one on either side, almost as long as the rostrum. Below these the lateral margin is produced on either side in a long process, extending almost as far as the antero-lateral process. Eyes large, rounded, and situated some distance from the lateral margin, on the posterior half of the head.

Between the eyes on the dorsal surface are two long sharp spines, one on either side of the median line. The first pair of antennæ extend to the middle of the last peduncular article of the second pair of antennæ. The second pair of antennæ have the first four articles short and about equal in length; the fifth is a little longer than the first four taken together; the sixth is a little longer than the fifth; the flagellum is broken in the only specimen.

<sup>1</sup> Proc. U. S. Nat. Mus., vol. 35, 1908, pp. 72-74.

<sup>2</sup> Norwegian North-Atlantic Expedition, XIV, Zoology, Crust., vol. 1, 1885, pp. 119-121, pl. 10, figs. 27-30.

<sup>3</sup> Challenger Report, Zool., vol. 17, pt. 48, 1886, pp. 15-18, pl. 4, figs. 9-14; pl. 5, figs. 1-4.

<sup>4</sup> Idem, p. 15, pl. 5, fig. 5. Also Studer, Abh. k. Akad. Wiss. Berlin, 1883, pp. 10-12, pl. 1, fig. 2.

The first segment of the thorax has the lateral margins produced on either side in one extremely long process, which is as long as the lateral process of the head. The following six segments each have the lateral margins produced on either side in two extremely long processes, as long as those of the first segment. The first three segments and the last three segments each have two sharp spines on the dorsal surface, one on either side of the median line. The fourth segment has four spines, two on either side of the median line in longitudinal series.

The abdomen is composed of a single large segment. Its posterior margin is produced in two long processes, one on either side of the median line, and its lateral margins are produced in a single long process on either side, posteriorly directed and situated about half the distance from the base to the extremity of the segment. On its dorsal surface is a single median sharp spine on the anterior portion of the segment. The uropoda are composed of a short peduncle, and two branches, not reaching quite to the extremity of the posterior processes of the abdomen, and between which they are situated. The outer is slightly shorter than the inner branch. In a dorsal view the peduncle does not show.

The first pair of legs are prehensile, the following pairs ambulatory.

Only one specimen, a male, was taken in the Northwest Pacific, June 7, 1906, at station 4781, lat.  $52^{\circ} 14' 30''$  N.; long.  $174^{\circ} 13'$  E., by the U. S. Bureau of Fisheries steamer *Albatross*, at a depth of 300 fathoms, in fine gray sand and pebbles.

The type, a dried specimen, is Cat. No. 42162, U.S.N.M.

This species comes from the same locality and depth as *Microprotus cæcus* Richardson,<sup>1</sup> and certainly bears a curious superficial resemblance to that form in the shape of the abdomen, which, however, has only four elongate processes instead of six. In other respects it is closer to *Iolella*, as previously stated.

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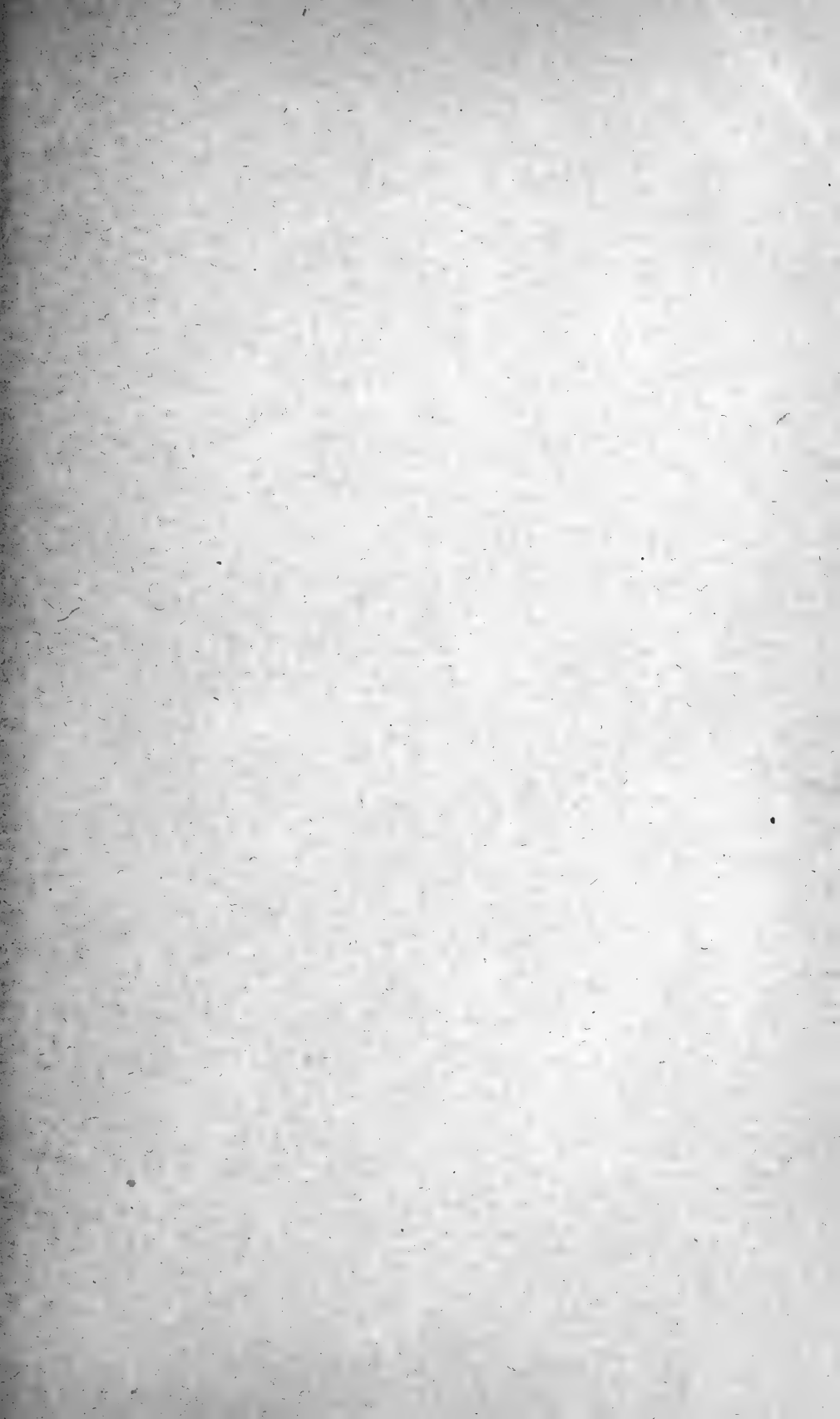
<sup>1</sup> Proc. U. S. Nat. Mus., vol. 37, 1909, pp. 116-118.













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des. *Talisman*  
with the kind regard  
Harriet Richardson

LES CRUSTACÉS ISOPODES DU TRAVAILLEUR ET DU TALISMAN;

FORMES NOUVELLES,

PAR M<sup>lle</sup> HARRIET RICHARDSON.

Extrait du Bulletin du Muséum d'histoire naturelle. — 1911, n° 7.

***Apseudes armatus* nov. sp.**

Corps allongé, ovale. Surface unie. Couleur jaune.

Tête saillante au milieu du bord antérieur en forme de long rostre triangulaire, dont chaque côté est muni, à la base, d'un petit processus triangulaire aigu à l'extrémité. Les angles latéraux antérieurs de la tête s'avancent sur chaque côté en un long processus triangulaire terminé en pointe. Sur le bord latéral, juste en arrière du processus antéro-latéral, il en existe un autre plus petit. Les yeux sont absents. Les deux paires d'antennes ont été cassées et perdues dans ce spécimen, qui est unique.

Le premier segment du thorax est soudé à la tête. Le deuxième et le troisième (premier et second segments libres) sont pourvus de deux épines latérales de chaque côté, l'une antérieure et l'autre postérieure. Le quatrième segment (troisième segment libre) est muni de trois épines latérales de chaque côté, l'une antérieure, l'autre postérieure et la dernière médiane. Les cinquième, sixième et septième segments (quatrième, cinquième et sixième segments libres) sont pourvus chacun d'une épine antéro-latérale de chaque côté; les quatrième et cinquième segments libres sont munis chacun d'une épine ventrale.

Les cinq premiers segments de l'abdomen sont courts et subégaux; chacun d'eux s'avance latéralement de chaque côté en forme d'épine; le cinquième a une épine ventrale. Le sixième, ou segment terminal, est étroit, allongé; son bord postérieur est tronqué. Les uropodes ont été perdus. Les pattes de la première paire ont un grand propode, avec des doigts étroits et allongés.

Un seul spécimen imparfait fut recueilli par le *Talisman*, 17 juin 1883, Drag. 33, Pr. 836-1,350 mètres; il fut trouvé dans de la vase rougeâtre. Côtes du Maroc. Au large du cap Cantin.

Le type est au Muséum d'Histoire naturelle de Paris.

**Sphyrapus Stebbingi** nov. sp.

Corps étroit, allongé. La tête est grande; elle fait saillie en avant sous forme d'une longue pointe aiguë qui s'avance entre les articles basilaires des antennes de la première paire. Les lobes oculaires sont grands, aigus et s'étendent en avant aussi loin que le processus médian de la tête. Les yeux sont absents. Les antennes de la première paire ont l'article basal étroit, allongé; le second article mesure environ le tiers de la longueur de l'article basal, et le troisième mesure à peu près le tiers de la longueur du second; le flagellum externe se compose de six articles et le flagellum interne de deux. Les antennes de la deuxième paire ont leurs deux premiers articles courts; le troisième est très petit; le quatrième est allongé et grêle; son flagellum compte cinq ou six articles.

Le premier segment du thorax est complètement fusionné avec la tête; le second est également soudé, mais une dépression marque le point de suture. Les cinq segments qui suivent sont libres, le premier et le dernier (le troisième et le septième) étant les plus courts et les trois intermédiaires subégaux.

Les cinq segments antérieurs de l'abdomen sont courts et subégaux, chacun mesurant environ la moitié de la longueur du dernier segment thoracique; leurs bords latéraux ne sont pas saillants, mais arrondis. Le sixième, ou segment terminal, forme une saillie triangulaire au sommet, lequel supporte deux poils divergents. L'article basilaire du pédoncule dépasse un peu le sommet du sixième segment abdominal; la branche interne est composée d'environ neuf articles et la branche externe de deux.

Les premiers gnathopodes sont grands, de même que leur basis qui est étalé; le merus est petit, le carpus allongé et dilaté; le propodus est grand, mais on ne peut en donner la forme exacte, à cause du doigt qui est cassé. Les seconds gnathopodes, ou pattes fossoriales, ont deux épines sur le carpus, deux sur le bord interne du propodus et une à son extrémité externe distale. Les cinq dernières paires de pattes sont simples, ambulateuses et munies de quelques poils.

Un spécimen imparfait fut recueilli par le *Travailleur*, 23 juillet 1880, Drag. 6, Pr. 1, 107 mètres, golfe de Gascogne.

Le type est au Muséum d'Histoire naturelle de Paris.

Quatre espèces seulement de ce genre sont connues, *S. serratus* Sars<sup>(1)</sup>, *S. anomalous* Sars<sup>(2)</sup>, *S. tudes* Norman and Stebbing et *S. malleolus* Norman and Stebbing<sup>(3)</sup>.

(1) Expédition norvégienne du Nord de l'Atlantique, Zool., *Crustacea*, I, 1885, p. 66-73, pl. XXI.

(2) *Crust. Norvège*, II, 1899, p. 9-10, pl. III-IV.

(3) *Trans. Zool. Soc. London*, XII, 1886, p. 98-101, pl. XXII, fig. 1, 2, 3.

Cette espèce a été nommée ainsi en l'honneur du Dr Thomas R. R. Stebbing.

**Gnathia cæca** nov. sp.

La tête est large, subcarrée; le front fait saillie entre les antennes et forme un processus largement arrondi. Les angles antérieurs latéraux s'avancent en saillie aiguë. Sur la partie postérieure de la tête se trouvent deux grands tubercules, un de chaque côté, près du bord latéral. À la partie antérieure de la tête, sur la ligne médiane, se trouve une profonde concavité ou fossette. Les antennes de la première paire ont un pédoncule de trois articles, dont le dernier est le plus long; le flagellum se compose de quatre articles. Les antennes de la seconde paire ont un pédoncule de cinq articles, dont le cinquième est environ deux fois aussi long que le quatrième; le flagellum se compose de trois articles, mais il est probablement cassé.

Il y a de petits lobes oculaires, mais pas d'yeux; les lobes sont incolores. Les mandibules s'étendent en avant à quelque distance de la tête; leur bord interne est sinueux, leur bord externe a une dent vers le milieu. Sur la partie ventrale de la tête, le bord antérieur, de chaque côté de la ligne médiane, est muni d'environ dix processus dentelés. Les maxillipèdes se composent d'un grand article basilaire, d'un autre petit et d'un minuscule article terminal. Le premier segment du thorax est étroit, court et confondu avec la tête. Les second et troisième segments sont subégaux. Tous les trois sont munis d'un double rang de petits tubercules, à peine visibles. Le quatrième segment est environ deux fois aussi long que chacun des deux précédents; vers le milieu il présente un rang transversal de petits tubercules presque invisibles. Le cinquième est presque deux fois aussi long que le quatrième; il est uni et possède une ligne médiane longitudinale. Le sixième segment est environ de la même longueur que le cinquième; ses angles latéraux postérieurs s'avancent en un grand processus. Le septième est brusquement plus étroit et plus court que le sixième segment thoracique; comme grandeur et comme forme, il est semblable aux segments abdominaux.

Les cinq premiers segments de l'abdomen sont de longueur subégale, avec les bords latéraux saillants vers le bas. Le sixième, ou segment terminal, est petit, de forme triangulaire, avec l'apex aigu. La branche interne des uropodes est un peu plus longue et plus large que la branche externe: elle s'étend jusqu'à l'extrémité du segment terminal de l'abdomen.

Un seul spécimen imparfait, un mâle, fut recueilli par le *Talisman*, 10 juillet 1883, Drag. 76, Pr. 2,638 mètres, vase jaune. Côtes du Soudan.

Le type est au Muséum d'Histoire naturelle de Paris.

Bien que cette espèce soit aveugle, elle semble appartenir au genre *Gnathia* plutôt qu'au genre *Cæcognathia*, en raison de la présence des lobes oculaires.

**Gnathia frontalis** nov. sp.

Corps oblong-ovale. Tête grande, presque carrée, plus large que longue, 2 millim.  $5 \times 1$  millim. 5. Entre les mandibules, le bord antérieur de la tête fait saillie en trois saillies dentelées, dont celle du milieu est aiguë, les deux autres sont placées de chaque côté. Entre le processus médian et les processus latéraux il s'en trouve un autre, triangulaire, produit par le bord antéro-inférieur; il y a, par conséquent, cinq processus dentelés entre les mandibules. Sur la partie antérieure de la tête, entre les yeux, se trouvent deux saillies, une de chaque côté de la ligne médiane; chacune d'elles porte de nombreux petits tubercules. Les antennes de la première paire ont les deux premiers articles courts et subégaux: le troisième est à peu près trois fois aussi long que le deuxième; le flagellum se compose de cinq articles; le premier est petit, les trois suivants sont subégaux; le dernier mesure environ la moitié du quatrième comme longueur. Les antennes de la première paire s'étendent jusqu'au bout du pédoncule des antennes de la seconde paire; ces dernières ont les trois premiers articles courts et subégaux; les deux derniers sont longs et subégaux; le flagellum se compose de six articles également subégaux. Les mandibules ont une dent proéminente sur le bord externe latéral, environ à la moitié de la distance entre la base et le sommet; le bord interne est muni de quatre dents irrégulières, entre le sommet et le bord inférieur. Les mandibules chevauchent à leurs extrémités.

Le premier segment du thorax est très court et étroit. Les deux segments suivants sont subégaux, chacun ayant environ 0 millim. 5 de longueur; ils sont à peu près deux fois aussi longs que le premier. Le quatrième segment a environ 1 millimètre; aussi long que le second et le troisième réunis, il est muni de quatre tubercules situés à peu près au tiers de la distance du bord antérieur, deux de chaque côté de la ligne médiane. Le cinquième segment est court, ayant seulement 0 millim. 5 de longueur. Le sixième est deux fois aussi long que le cinquième dans sa partie médiane dorsale et a une longueur de 1 millimètre; ses angles post-latéraux s'avancent de chaque côté en lobes arrondis. Le septième segment est court et étroit, il ressemble aux segments abdominaux.

Les cinq premiers segments de l'abdomen sont subégaux; ils mesurent ensemble 1 millim. 5; à l'exception du premier, ils ont les côtés en saillie, les côtés du deuxième étant très aigus. Le sixième, ou segment terminal, est triangulaire avec l'apex bifide; il mesure 1 millimètre de long et 1 millimètre de large à la base. Les uropodes s'étendent un peu au delà de l'extrémité de l'abdomen; leurs branches sont semblables, subégales, ovales; la branche externe est un peu plus aiguë à son extrémité que la branche interne.

Les pattes du quatrième segment ont une rangée de cinq tubercules, sur leur basis; il y a, en outre, un tubercule isolé à la base du merus.



Un grand nombre de spécimens, mâles, femelles et larves, furent recueillis par le *Talisman*, 8 juillet 1883, Drag. 64, Pr. 355 mètres, au cap Bojador.

Cette espèce est très voisine du *Gnathia Grimaldii* Dollfus<sup>(1)</sup>, mais en diffère par un bourrelet tuberculeux sur la partie antérieure de la surface dorsale de la tête, par deux dents additionnelles sur le bord antérieur de la tête, par une rangée de cinq tubercules à la base des pattes de la cinquième paire, et une sur le merus, par la forme plus arrondie de la branche interne des uropodes et l'apex bifide du dernier segment abdominal. *Gnathia vorax* Lucas<sup>(2)</sup>, *Gnathia rapax* Edwards<sup>(3)</sup> et *Gnathia forficularis* Risso<sup>(4)</sup> sont tous très semblables entre eux et ressemblent également beaucoup aux deux espèces mentionnées plus haut.

**Leptanthura truncata** nov. sp.

Corps extrêmement étroit, allongé. Surface unie. Couleur jaune. Tête environ aussi large que longue, 1 millimètre  $\times$  1 millimètre, avec le front faisant saillie en une pointe médiane petite, mais distincte. Angles antérieurs latéraux formant des proéminences arrondies. Yeux absents. Chez la femelle, les antennes de la première paire sont extrêmement courtes; le premier article du pédoncule est le plus long; le second et le troisième sont courts, subégaux et les deux réunis mesurent environ la même longueur que le premier; le flagellum se compose de quatre petits articles dont le premier est deux fois aussi long que chacun des trois autres. Chez le mâle, le flagellum est allongé et se compose de quinze articles; il s'étend au delà du bord postérieur de la tête. Dans les deux sexes les antennes de la seconde paire sont semblables, extrêmement courtes, avec un pédoncule de cinq articles et un flagellum de trois articles courts, dont le premier mesure à lui seul la longueur du deuxième et du troisième réunis.

Les premier et sixième segments du thorax sont subégaux, chacun ayant 1 millim. 5 de long; les deuxième, troisième, quatrième et cinquième segments sont subégaux, mesurant chacun 2 millimètres de long; le septième est le plus court, sa longueur dépasse légèrement 1 millimètre. La plus grande largeur du corps est 1 millimètre.

Les six premiers segments de l'abdomen sont distincts et subégaux, à l'exception du premier qui est presque deux fois aussi long que chacun des cinq autres. La longueur totale de l'abdomen est 2 millim. 5, les cinq premiers segments ayant 1 millimètre. Le segment terminal est large à son extrémité, laquelle est tronquée d'une manière arrondie. La branche in-

(1) *Bull. Soc. Zool. Fr.*, XXVI, 1901, p. 240-241, fig. 1.

(2) *Ann. Soc. Entom. Fr.* (2), VII, 1849, p. 459-461, pl. XV, fig. 1.

(3) *Hist. nat. des Crust.*, 1840, p. 196-197, pl. XXXIII, fig. 12.

(4) *Crust. des env. de Nice*, 1816, p. 52-53, pl. II, fig. 10.

terne des uropodes dépasse de la moitié de sa longueur l'extrémité de l'abdomen; elle est large, avec le sommet aigu. Les branches externes sont très larges, elles s'infléchissent sur le segment terminal et chevauchent au milieu. La branche externe s'étend jusqu'à l'extrémité du pédoncule et elle mesure 0 millim. 75 de longueur.

Chez le mâle, les trois derniers segments du thorax présentent, sur la face ventrale, deux saillies proéminentes antérieures et deux postérieures de chaque côté de la ligne médiane; tous ces processus deviennent graduellement plus petits du cinquième au septième segment.

Les trois premières paires de pattes sont préhensiles; dans la première paire le propodus est beaucoup plus grand que dans les deux paires suivantes.

Les quatre dernières paires de pattes sont ambulatories.

Cinq spécimens (deux imparfaits), parmi lesquels deux mâles, furent recueillis par le *Talisman*, 13 juillet 1883, Drag. 88, Pr. 888 mètres, au Nord du banc d'Arguin. Sable vaseux verdâtre.

La description que nous venons de donner se rapporte à la femelle. Cette espèce diffère de *Leptanthura tenuis* Sars<sup>(1)</sup> par sa taille, laquelle est environ deux fois aussi grande, par l'antenne de la première paire qui se trouve plus longue chez le mâle, son flagellum étant composé de quinze articles au lieu de dix; par l'absence de poils sur le flagellum, qui est très poilu dans *L. tenuis*; par le segment terminal du corps qui est arronditronqué et très large, tandis que dans l'espèce type il est «lancolé, se terminant en pointe aiguë»; par les branches internes plus larges des uropodes; par les branches externes qui chevauchent, tandis que dans *L. tenuis* elles se rencontrent presque; enfin, par les trois derniers segments du thorax qui, chez le mâle, présentent sur le côté ventral une paire de processus antérieurs et une paire de processus postérieurs, tandis que dans *L. tenuis* (d'après la figure) il ne paraît exister qu'une seule paire postérieure et seulement sur le dernier segment du thorax.

La seule autre espèce connue du genre est *Leptanthura glacialis* Hodgson.

Le type est au Muséum d'Histoire naturelle de Paris.

#### **Pseudanthura** NOV. GEN.

Corps extrêmement long et étroit. Tête sans yeux. Antennes de la première paire avec un pédoncule composé de trois articles et un flagellum composé de six. Antennes de la deuxième paire avec un pédoncule de cinq articles et un flagellum composé également de cinq articles qui sont courts. Segments du thorax étroits, allongés. Les sept paires de pattes

<sup>(1)</sup> *Crust. Norvège*, II, 1899, p. 47-49, pl. XX.

sont présentes; la première paire est fortement préhensile; la septième est brusquement plus courte que la sixième.

L'abdomen est composé de cinq segments courts et distincts, suivis du segment terminal qui a une forme triangulaire. La branche interne des uropodes est étroite, lancéolée. La branche externe ne s'infléchit pas sur le segment terminal, mais est petite, rudimentaire et spiniforme, placée à la base de la branche interne, sur son côté externe. Les pléopodes de la première paire sont transformés en valves operculaires couvrant les paires suivantes.

Le type du genre est *Pseudanthura lateralis* nov. sp.

Ce genre diffère de tous les genres connus de cette famille par la forme de la branche externe des uropodes, qui, au lieu de s'infléchir sur le telson, est située en dehors de la branche interne à l'extrémité externe du pédoncule.

***Pseudanthura lateralis* nov. sp.**

Corps extrêmement étroit et allongé. Couleur jaune. Tête petite, sub-carrée, 1 millimètre  $\times$  1 millimètre, plus étroite antérieurement que postérieurement. Front faisant saillie en un processus médian long et étroit. Angles antérieurs latéraux arrondis. Yeux absents. Les antennes de la première paire ont un pédoncule composé de trois articles, dont le premier est le plus grand, les deux autres étant subégaux; le flagellum se compose de six articles. Les antennes de la seconde paire ont un pédoncule composé de cinq articles et un flagellum composé de cinq articles courts. Les antennes de la première et de la deuxième paire sont de longueur subégale.

Le premier segment du thorax est deux fois aussi long que la tête; il a une longueur de 2 millimètres. Sur le côté ventral, près du bord postérieur, se trouve un seul processus médian, qui est long et arrondi à son extrémité. Les deuxième et troisième segments ont une longueur subégale, mesurant chacun 3 millimètres; le quatrième est le plus long, ayant 4 millimètres; le cinquième a une longueur de 3 millim. 5; le sixième, de 3 millimètres, comme le deuxième et le troisième; le septième est le plus court, n'étant pas plus long que la tête (1 millim.).

La largeur du corps varie entre 1 millimètre et 1 millim. 5. Près du bord antérieur des deuxième et troisième segments se trouvent deux petits tubercules, un de chaque côté de la ligne médiane.

La longueur totale de l'abdomen est presque 3 millimètres. Les cinq premiers segments sont courts, distincts; ils mesurent tous ensemble 1 millim. 5; le premier est deux fois aussi long que chacun des quatre autres, qui sont subégaux. Le sixième, ou segment terminal, a 1 millim. 5 de long et, à la base, presque une largeur de 1 millim. 5; il est de forme triangulaire avec l'apex arrondi. La branche interne des uropodes est

longue et élancée, aiguë à son extrémité, et s'étend jusqu'au sommet du dernier segment abdominal. La branche externe est menue, aiguë, spiniforme et placée à la base de la branche interne, sur le côté externe. La première paire de pléopodes est transformée en operculum composé de deux valves dures qui recouvrent complètement les autres pléopodes. Les pattes de la première paire sont préhensiles avec un grand propodus. Les six paires suivantes sont semblables, ambulatoires; la dernière paire est brusquement plus courte que les autres.

Deux spécimens en parfait état et la moitié d'un autre furent recueillis par le *Talisman*, 11, 12 et 18 juillet, Drag. 80, 83 et 101, Pr. 930, 1,139 et 3,200 mètres, côtes du Soudan, entre Dakar et la Praya. Vase grise, sable vasard verdâtre, vase jaune.

Le type est au Muséum d'Histoire naturelle de Paris.

***Pleopodias vigilans* nov. sp.**

Corps oblong, ovale : 11 millimètres de large, 28 millimètres de long (sans compter les uropodes). Surface unie. Couleur marron.

Tête grande, plus large que longue, 3 millim.  $5 \times 5$  millimètres. Front faisant saillie en un processus qui est arrondi, tronqué à son extrémité antérieure. Yeux très grands, ovales, occupant la plus grande partie de la tête, situés presque côte à côte, distants seulement de 0 millim. 5. Les antennes de la première paire se composent de huit articles; elles dépassent d'un article le bord postérieur de la tête et s'étendent jusqu'au bout du pédoncule des antennes de la deuxième paire. Le pédoncule de ces dernières est tout à fait bien défini relativement au flagellum : ses trois premiers articles sont courts, les deux premiers subégaux, le troisième est un peu plus long que les deux autres; les quatrième et cinquième articles sont subégaux et chacun d'eux environ deux fois aussi long que le troisième; le flagellum est composé de six articles dont le premier est à peu près aussi long que le dernier article du pédoncule; les cinq articles suivants ont chacun environ la moitié de la longueur du premier. Les antennes de la deuxième paire s'étendent jusqu'au bord postérieur du deuxième segment thoracique.

Le premier segment du thorax a 3 millimètres de longueur; le deuxième 1 millim. 5; le troisième 2 millimètres; le quatrième est le plus long, il a 3 millim. 5; le cinquième mesure 2 millim. 5; le sixième est aussi long que le premier, 3 millimètres; le septième est de la même longueur que le troisième, 2 millimètres. Les épimères sont présents sur tous les segments, excepté le premier; sur le second et le troisième, ils s'étendent sur l'entière longueur du bord latéral et leurs extrémités sont arrondies; sur les quatre segments qui suivent ils s'étendent au milieu ou presque jusqu'au milieu du bord latéral. Le thorax est arqué, il s'élargit graduellement vers le milieu et va en décroissant vers les extrémités.

Sauf sur les côtés, le premier segment de l'abdomen est entièrement caché par le dernier segment thoracique. Le second est également presque entièrement couvert au milieu de la région dorsale. Les trois suivants ont chacun 1 millimètre de longueur. Le segment terminal est plus long que large, ayant 5 millimètres de long sur 4 millimètres de large à la base; il s'atténue graduellement et se termine par une extrémité arrondie. L'abdomen a une largeur de 5 millim. 5 à l'endroit où il se réunit au thorax; il se rétrécit graduellement et se termine par une extrémité étroite. Les uropodes sont plus longs que l'abdomen. L'article basilaire a une longueur de 2 millimètres sur son bord externe; la branche externe a 5 millim. 5 de long, la branche interne 4 millimètres. La première dépasse de 2 millim. 5 l'extrémité du segment terminal de l'abdomen. Ces deux branches sont longues et étroites, avec les extrémités arrondies.

Toutes les pattes sont préhensiles avec de longs dactyles recourbés. La septième paire est plus longue que chacune des autres; elle a le propodus extrêmement long.

Un seul spécimen, une femelle, fut recueillie par le *Talisman*, 9 juillet 1883, Drag. 71, Pr. 640 mètres, côtes du Soudan. Sable vasard, coraux, coquilles.

Le type est au Muséum d'Histoire naturelle de Paris.

***Livoneca soudanensis* nov. sp.**

Corps oblong-ovale, environ deux fois aussi long que large, 7 millimètres  $\times$  15 millimètres. Surface unie. Couleur marron clair.

Tête petite, deux fois aussi large que longue, 1 millim. 5  $\times$  3 millimètres, subtriangulaire avec l'apex obtusément arrondi. Yeux petits, ovales, composés et situés à 1 millimètre l'un de l'autre à leurs extrémités antérieures. Les antennes de la première paire se composent de sept articles; elles n'atteignent pas les angles latéraux antérieurs du premier segment thoracique. Les antennes de la seconde paire, composées de neuf articles, dépassent les angles latéraux antérieurs de la tête de leurs trois derniers articles. La tête fait saillie en un processus arrondi antérieur aux antennes et au bord frontal.

Le premier segment du thorax a 2 millimètres de long; les second, troisième et cinquième segments sont subégaux, chacun ayant 1 millim. 5 de long; les quatrième et sixième segments ont chacun 1 millim.; le septième est le plus court, il a seulement 0 millim. 75. Les épimères sont présents sur tous les segments, excepté sur le premier; ils ont la forme d'étroites plaques, qui s'étendent sur les deux tiers du bord latéral dans les deuxième et troisième segments, et seulement sur la moitié du bord latéral dans les quatre derniers.

Les cinq premiers segments de l'abdomen sont courts, les quatre premiers sont subégaux en longueur, le cinquième est presque deux fois

aussi long que chacun des autres. Leurs parties latérales font saillie latéralement aussi loin que les bords latéraux du segment terminal. Le dernier segment est plus large que long, 5 millimètres  $\times$  3 millimètres; en arrière, il est largement arrondi. Les branches des uropodes sont de forme semblable, allongées, ovales; la branche externe est un peu plus longue que la branche interne. Les uropodes ne dépassent pas l'extrémité du segment terminal de l'abdomen.

Les pattes sont toutes préhensiles et semblables.

Seulement deux spécimens, deux femelles, furent recueillis par le *Talisman*, l'un, le 9 juillet 1883, Drag. 69, Pr. 730 mètres, côtes du Soudan, dans du sable vaseux, coraux; l'autre, Drag. 72, Pr. 882 mètres, même localité.

Le type est au Muséum d'Histoire naturelle de Paris.

Cette espèce est très voisine de *Livoneca sulcata* Kœlbel<sup>(1)</sup>, mais elle en diffère par les antennes de la deuxième paire qui ont neuf articles au lieu de quatorze, par son plus petit abdomen, lequel, dans *L. sulcata*, dépasse les segments du thorax, par le segment terminal non excavé dans le milieu du bord postérieur, et également par la forme du front de la tête. *Livoneca sulcata* fut trouvé aux îles Canaries.

#### **Janirella glabra** nov. sp.

Corps allongé, ovale, plus de trois fois plus long que large. Surface du corps unie. Couleur jaune.

Tête avec le front faisant saillie en un rostre terminé par trois dents, dont celle du milieu est arrondie. Les angles antérieurs-latéraux font saillie de chaque côté en un processus long, étroit et aigu. Entre le rostre et le processus antéro-latéral se trouve une saillie triangulaire. Yeux absents. Les antennes de la première paire ont un grand article basal qui s'étend jusqu'au bout du deuxième article pédonculaire des secondes antennes; les deuxième et troisième articles égalent environ la moitié de la largeur de l'article basilaire, le second étant plus court que le premier; le flagellum se compose de quatre articles. Les antennes de la deuxième paire sont cassées au bout du troisième article pédonculaire, lequel, sur son bord externe, porte un exopodite. La mandibule a un palpe de trois articles.

Le bord latéral du premier segment thoracique fait saillie de chaque côté en un seul processus qui est long, étroit, aigu à l'extrémité. Dans les second, troisième et quatrième segments le bord latéral fait saillie de chaque côté en deux processus, dont le postérieur est fort long et étroit. Les cinquième, sixième et septième segments ont le bord latéral faisant saillie en un long et étroit processus.

<sup>(1)</sup> *Ann. d. K. K. Naturhist. Hofmuseums*, Wien, VII, 1892, p. 105-107, pl. X, fig. 1-2.

L'abdomen se compose d'un seul segment qui est étroit à la base, s'élargit environ vers le milieu, puis s'atténue en une extrémité étroite et arrondie. De chaque côté, le bord latéral, dans sa partie la plus large, présente trois dents. L'uropode, d'un seul article, est placé juste au-dessous de la dernière dent. Les pattes sont toutes ambulatoires et deviennent graduellement plus longues.

Le spécimen unique est cassé en trois morceaux.

Un individu, un mâle, fut recueilli par le *Talisman*, 27 juin 1883, Drag. 52, Pr. 946 mètres, dans du sable piqué de noir; roches. Parages des Canaries. Lat. N. 28°33'; Long. O. 15°39'.

Cette espèce diffère de *Janirella Nanseni* Bonnier<sup>(1)</sup>, à laquelle elle est alliée de très près, par la forme du rostre, par l'absence d'épines sur la surface dorsale du corps; elle en diffère encore parce qu'elle ne présente que trois dents sur le bord latéral de l'abdomen.

Le type est au Muséum d'Histoire naturelle de Paris.

***Janirella abyssicola* nov. sp.**

Corps oblong-ovale, presque deux fois et demie aussi long que large (y compris le rostre). Couleur jaune. Surface unie.

Tête avec le front faisant saillie en un long rostre proéminent, triangulaire, dont l'extrémité aiguë dépasse un peu l'article basilaire des premières antennes. Les angles antérieurs-latéraux de la tête sont aigus. Les yeux sont absents. Les antennes de la première paire ont le premier article du pédoncule environ deux fois aussi long que large; les second et troisième articles sont subégaux et mesurent environ la moitié de la largeur de l'article basilaire; le flagellum se compose d'environ cinq articles. Les antennes de la deuxième paire sont cassées au bout du troisième article du pédoncule.

Le premier segment du thorax a le bord latéral entier, ses angles antérieurs latéraux faisant une saillie aiguë. Les bords latéraux des second, troisième et quatrième segments sont bilobés, et les angles antérieurs latéraux de chaque lobe aigus; l'émargination devient graduellement plus large du second au quatrième segment. Les bords latéraux des trois derniers segments sont entiers, les angles antérieurs latéraux étant plus aigus dans le cinquième et le sixième segment que dans le dernier.

L'abdomen se compose d'un seul segment qui porte cinq dents de chaque côté. Postérieurement il est étroitement arrondi. Les uropodes, qui consistent en une seule branche de deux articles, sont situés dans l'émargination comprise entre la dernière dent latérale et le lobe terminal.

Les pattes sont cassées dans le spécimen, qui est unique.

Un individu, un mâle, fut recueilli par le *Travailleur*, 31 juillet 1881,

<sup>(1)</sup> *Ann. Univ. Lyon*, 1896, p. 587-593, pl. XXXIII, fig. 1.

Drag. 30, Pr. 1,205 mètres; golfe de Cadix.

Le type est au Muséum d'Histoire naturelle de Paris.

**Urias** NOV. GEN.

Tête avec le front faisant saillie au milieu en un large processus compris entre les antennes. Yeux placés latéralement aux extrémités de processus pédonculiformes.

Les cinq premiers segments du thorax plus larges et plus longs que les deux derniers.

Abdomen composé de deux courts segments en avant du segment terminal, qui est piriforme. Uropodes situés dorsalement et issus de deux saillies proéminentes, d'ailleurs placés juste au-dessous du milieu de la surface dorsale du segment terminal, un de chaque côté de la ligne médiane. Ils consistent en un article basilaire et en une simple branche spiniforme.

Le type du genre est **Urias spinosus** nov. sp.

Ce genre se rapproche surtout de *Dendroton* Sars, auquel il ressemble par les uropodes placés dorsalement; mais il en diffère parce qu'il ne possède qu'une branche aux uropodes et parce que les yeux sont placés sur des processus pédonculiformes de la tête.

**Urias spinosus** nov. sp.

Corps oblong-ovale, couvert de longues épines. Couleur brun clair.

Tête plus large que longue, avec le front saillant au milieu, entre les antennes, sous forme d'un processus dont les angles antérieurs latéraux sont allongés en épine. Yeux placés latéralement de chaque côté de la tête, aux extrémités de processus pédonculiformes. Les antennes de la première paire ont un pédoncule composé de trois articles; le flagellum est cassé. Le premier article du pédoncule des antennes de la seconde paire porte une longue épine sur le bord externe; le second article est muni de huit épines; le troisième article en a trois. Les antennes de la seconde paire sont brisées au bout du troisième article; la partie cassée est perdue.

Le bord latéral du premier segment thoracique porte trois épines, dont la postérieure est la plus longue; celle du milieu est l'épine épimérale. Le second segment est muni de huit longues épines effilées, quatre de chaque côté de la ligne médiane près du bord antérieur; il possède également un rang de sept épines plus petites, postérieures aux précédentes, une sur la ligne médiane et trois de chaque côté. Le bord latéral fait saillie en quatre épines, dont les deux du milieu sont épimérales. Le troisième segment est muni d'une rangée antérieure de huit longues épines, quatre de chaque côté de la ligne médiane, et d'une rangée postérieure de cinq épines courtes, une médiane et deux de chaque côté de la ligne médiane. Le qua-



trième segment présente un rang antérieur de huit longues épines, quatre de chaque côté de la ligne médiane, et un rang postérieur de trois petites épines, une médiane et une de chaque côté. Le cinquième segment a un seul rang de huit longues épines, quatre de chaque côté de la ligne médiane. Sur les troisième, quatrième et cinquième segments, on observe une longue épine additionnelle sur la partie postérieure du bord latéral, juste au-dessous de l'épine antérieure la plus externe, et le bord latéral fait saillie en quatre épines. Les sixième et septième segments sont très courts et dépourvus d'épines sur la face dorsale. Il existe une longue épine de chaque côté de ces deux segments, dont les bords latéraux s'avancent en deux longues épines.

L'abdomen se compose de deux segments courts, antérieurs au grand segment terminal piriforme. La partie antérieure de ce dernier est munie de deux rangs de six longues épines, trois de chaque côté de la ligne médiane. Le bord latéral porte de chaque côté neuf épines qui deviennent graduellement plus courtes. L'extrémité du segment est arrondie et se termine par deux petites épines, une de chaque côté de la ligne médiane. Juste au-dessous du milieu du segment, sur la face dorsale, se trouvent deux saillies proéminentes, une de chaque côté de la ligne médiane. À partir de l'angle externe latéral de ces élévations sont attachés les uropodes, qui s'étendent sur la face dorsale et pointent vers le bas. Leur article basilaire est étroit, allongé. Il n'y a qu'une seule branche, laquelle consiste en une simple épine.

Toutes les pattes, à l'exception de celles de la première paire, sont extrêmement longues et effilées; tous leurs articles, excepté le propodus et le dactylus, sont couverts d'épines. Les six dernières paires de pattes sont semblables, avec le propodus extrêmement long, surtout dans les quatre dernières paires. Les pattes de la première paire sont courtes et préhensiles.

Un seul spécimen fut recueilli par le *Talisman*, 9 juillet 1883, Drag. 70, Pr. 698 mètres, côtes du Soudan. Sable vaseux, coraux, coquilles.

Le type est au Muséum d'Histoire naturelle de Paris.

#### **Dactylostylis** NOV. GEN.

(Famille des Desmosomidés.)

Tête avec les angles latéraux antérieurs faisant saillie de chaque côté, en forme d'un long processus. Yeux absents. Mandibules avec un palpe de trois articles.

Les premier, second, cinquième et sixième segments du thorax font saillie de chaque côté en un long processus; les troisième et quatrième segments s'avancent en deux processus, le septième segment n'est pas saillant sur les côtés.

Abdomen composé d'un seul segment de forme ovale, avec postérieure arrondie.

Les uropodes consistent, de chaque côté, en un seul processus, lequel est rigide, uniarticulé, long et spiniforme.

Les pattes sont toutes semblables, ambulateires; elles deviennent plus longues par gradation.

Le type du genre est *Dactylostylis acutispinus* nov. sp.

***Dactylostylis acutispinus* nov. sp.**

Corps allongé, ovale, un peu plus de quatre fois plus long que large. Surface unie. Couleur jaune. Tête avec les angles latéraux antérieurs faisant saillie de chaque côté en un processus extrêmement long et aigu, en arrière duquel le bord latéral est muni d'un petit lobe arrondi. Le bord antérieur s'avance en un petit processus triangulaire situé à la base du long processus antéro-latéral. Les yeux sont absents. Les antennes de la première paire ont un grand article basal; le second article est aussi long que le premier, mais il est de moitié moins large; les trois articles suivants sont courts. Les antennes de la deuxième paire sont cassées au bout du troisième article.

Les premier et deuxième segments du thorax ont leurs bords latéraux qui, des deux côtés, font saillie en un processus extrêmement long et aigu. Les bords latéraux des troisième et quatrième segments font saillie de chaque côté en deux longs processus aigus dont l'antérieur est plus court. Les cinquième et sixième segments ont leurs bords latéraux saillants de chaque côté sous forme d'un très long processus. Les bords latéraux du septième segment ne sont pas saillants. Sur le bord postérieur, à la base des processus latéraux des cinquième et sixième segments, se trouve un lobe arrondi ou renflement; ce dernier existe également sur le bord antérieur à la base des processus latéraux des deuxième et troisième segments.

L'abdomen se compose d'un seul segment lequel est ovale et postérieurement arrondi. Les uropodes consistent de chaque côté en un seul processus, lequel est rigide, uniarticulé, long et spiniforme.

Les pattes sont toutes semblables et ambulateires; elles deviennent graduellement plus longues.

Un seul individu, un mâle, fut recueilli par le *Talisman*, 9 juillet 1883, Drag. 70, Pr. 698 mètres, sable vaseux, coraux, coquilles, côtes du Soudan.

Le type est au Muséum d'Histoire naturelle de Paris.

***Heteromesus similis* nov. sp.**

Corps allongé. Tête grande, profondément enfoncée dans le premier segment thoracique; bord antérieur droit. Yeux absents. Les antennes de la première paire ont l'article basal grand et dilaté; le deuxième article est

long, étroit, cylindrique; il porte trois longs poils; le flagellum se compose de quatre petits articles. Les deux articles basaux des antennes de la seconde paire sont courts; le troisième article est long et porte une épine à son extrémité distale interne.

Sur le bord latéral, de chaque côté, les trois premiers segments du thorax sont munis de deux épines. La surface dorsale de chacun des trois premiers segments porte un tubercule médian, puis deux de chaque côté et l'un au-dessus de l'autre, et un tubercule latéral. Sur la face dorsale de la partie antérieure du quatrième segment, les tubercules latéraux existent, mais les autres ont disparu; sur la partie postérieure il n'y a pas de tubercules dorsaux. Ce segment est rétréci vers l'extrémité postérieure, laquelle est beaucoup plus étroite et plus courte que la partie antérieure; sur le bord latéral de chaque côté des deux divisions du segment (antérieure et postérieure) se trouvent deux épines ou tubercules. Le cinquième segment est étroit, allongé, dilaté à la base; ses côtés sont subparallèles. Il n'existe pas de tubercules sur ce segment pas plus que sur les deux segments qui suivent, lesquels sont courts et subégaux.

L'abdomen se compose de deux segments, dont l'un, court, est antérieur au segment terminal.

Vers le milieu du bord latéral du segment terminal on trouve de chaque côté une épine pointue très distincte. L'extrémité postérieure de ce segment est arrondie entre les uropodes; ces derniers sont simples, uniramés et spiniformes.

Un seul spécimen, d'ailleurs incomplet, fut recueilli par le *Talisman*, 22 août 1883, Drag. 31, Pr. 2,995 mètres, au N. O. de S. Miguel (Açores).

Le type est au Muséum d'Histoire naturelle de Paris.

Cette espèce est tout à fait distincte d'*Heteromesus spinosus* (Beddard)<sup>(1)</sup> provenant aussi des Açores. Elle a plus de ressemblance avec *Heteromesus spinescens* Richardson<sup>(2)</sup>; cependant elle en diffère par l'absence d'épines sur la tête, par la présence de deux épines situées de chaque côté des bords latéraux sur les trois premiers segments thoraciques, par deux épines placées de chaque côté des deux divisions (antérieure et postérieure) du quatrième segment, par une épine pointue et distincte de chaque côté du bord latéral du segment terminal de l'abdomen, par le tout autre quadriarticulé des antennes de la première paire et par le tout autre arrangement des tubercules sur les trois premiers segments du thorax.

#### **Eurycope Nobilii nov. sp.**

Corps oblong-ovale, pas tout à fait trois fois plus long que large. Surface unie. Couleur d'un brun rougeâtre.

<sup>(1)</sup> *Ischnosoma spinosa* Beddard, Challenger Report, XVII, 1886, p. 40-42, pl. VI, fig. 1-5.

<sup>(2)</sup> *Proc. U. S. Nat. Mus.*, XXXV, 1908, p. 81, 83-84.

Bord antérieur de la tête faisant saillie au milieu en un large processus excavé à l'extrémité et dont les angles latéraux antérieurs sont aigus. Sur ce processus du front, près du bord latéral, on trouve de chaque côté un petit tubercule qui porte une soie. Les angles latéraux antérieurs de la tête font également une saillie aiguë. Yeux absents. Les antennes de la première paire ont l'article basal grand, dilaté; le deuxième article est petit; les articles qui suivent ne sont pas très distincts. Les antennes de la seconde paire sont cassées et perdues dans ce spécimen, qui est unique.

Les quatre premiers segments du thorax sont courts et subégaux. Les trois derniers sont longs, le septième étant le plus allongé. Les épimères sont présents sur les quatre premiers segments; ils ont la forme de petits processus aigus situés aux angles antérieurs latéraux. Ces angles, dans les trois derniers segments, font une saillie aiguë.

L'abdomen se compose d'un seul segment, qui est d'ailleurs grand et arrondi à son extrémité. Les uropodes ont deux branches; la branche externe est de moitié moins longue que la branche interne; elle n'est pas visible dorsalement.

Toutes les pattes sont cassées et perdues.

Un seul spécimen, d'ailleurs incomplet, fut recueilli par le *Travailleur*, 23 juillet 1880, Drag. 7, Pr. 1, 107 mètres, golfe de Gascogne.

Le type est au Muséum d'Histoire naturelle de Paris.

Cette espèce semble se rapprocher plus de *Eurycope atlantica* Bonnier<sup>(1)</sup> que de toute autre espèce connue du genre. Elle est nommée en souvenir de feu le Dr Giuseppe.

#### ***Ilyarachna abyssorum* nov. sp.**

Corps oblong-ovale, environ trois fois plus long que large, 4 millim. 5 × 13 millimètres.

Tête trois fois plus large que longue, 1 millimètre × 3 millimètres; ses angles antérieurs latéraux sont arrondis et ne forment pas saillie; les parties latérales de la tête ne sont pas dilatées. Yeux absents. Les antennes de la première paire ont l'article basal large et dilaté, avec le bord externe latéral recourbé en dehors et l'angle externe antéro-latéral saillant au delà de l'angle interne; les second et troisième articles sont petits et étroits, le deuxième étant un peu plus court que le troisième; le flagellum se compose de onze articles. Les antennes de la deuxième paire sont cassées au bout du quatrième article. Les mandibules n'ont pas de palpe.

Les quatre premiers segments du thorax sont courts et subégaux comme longueur, chacun d'eux ayant environ 1 millimètre; les trois segments qui suivent sont plus larges et croissent graduellement en longueur; le cinquième a 1 millim. 5 de long, le sixième 1 millim. 75 et le septième

<sup>(1)</sup> *Ann. Univ. Lyon*, 1896, p. 604-605, pl. XXXIV, fig. 2.

2 millimètres. Les épimères sont présents sur les quatre premiers segments; ils s'étendent sur l'entière longueur du bord latéral dans les trois premiers; leurs extrémités antérieures sont très aiguës et forment des processus qui dépassent le bord antérieur des segments; ils semblent partagés en deux parts dont l'une est antérieure et l'autre postérieure. Les épimères du quatrième segment occupent les deux tiers postérieurs du bord latéral; ils sont aigus à leurs extrémités antérieures.

L'abdomen se compose de deux segments, l'un antérieur court, l'autre terminal large, de forme triangulaire, avec l'apex arrondi. L'abdomen mesure 3 millimètres de long et 3 millimètres de large à la base. Les uropodes consistent en un article basilaire et en deux branches placées près du bord externe latéral du pédoncule; ces dernières sont situées à quelque distance de l'extrémité; la branche interne est postérieure à la branche externe et plus grande, quoique ne dépassant pas l'extrémité du pédoncule; la branche externe est menue.

Les pattes natatoires sont brisées et perdues dans tous les spécimens; dans l'un la septième patte est présente et se distingue par l'article carpien, qui est tout à fait étendu.

Trois spécimens incomplets furent recueillis par le *Talisman*, 25 août 1883, Drag. 135, Pr. 4,165 mètres, et un ou deux fragments, 24 août, 1883, Drag., 134, Pr. 4,060 mètres, vase blanche molle. Des Açores en France.

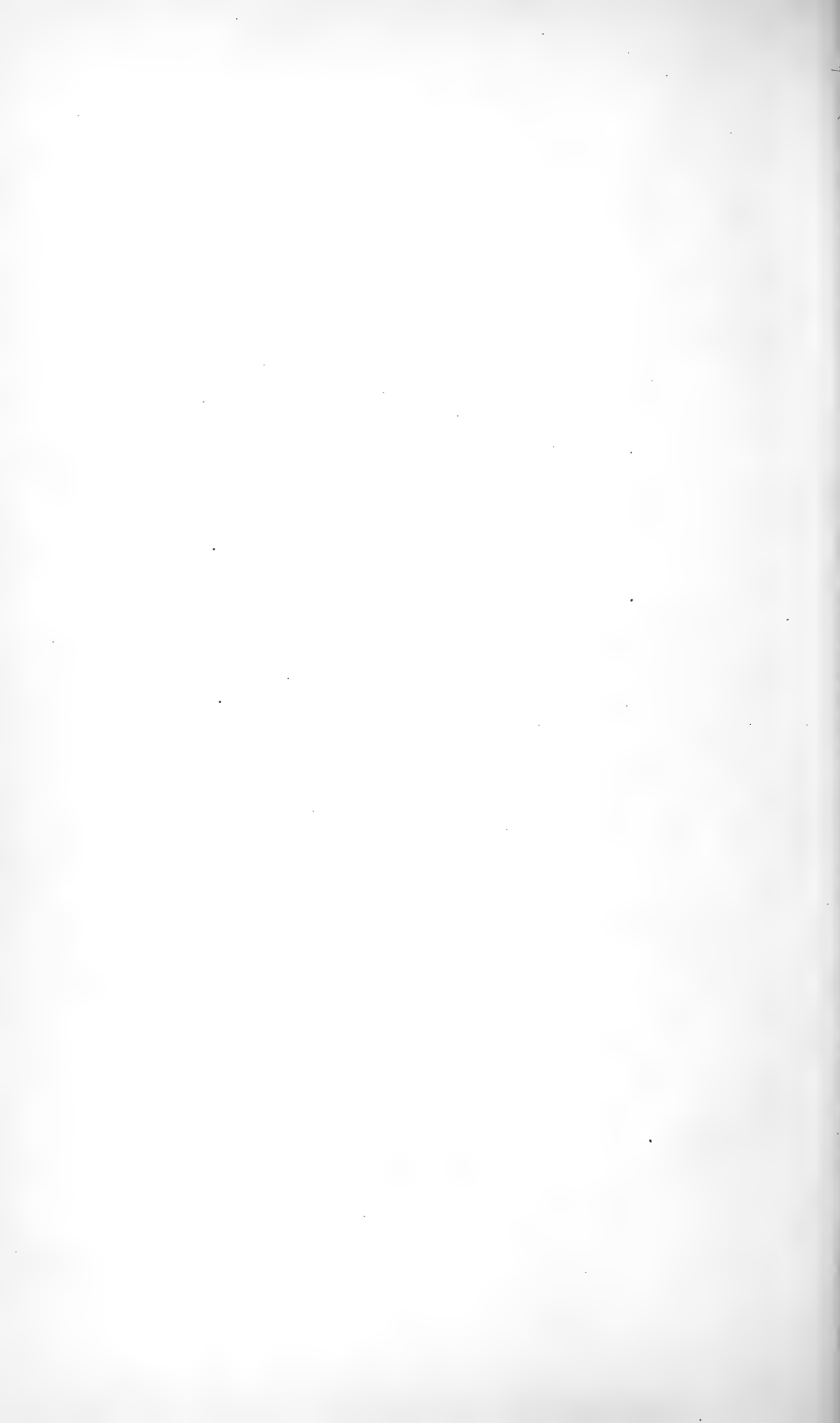
Le type est au Muséum d'Histoire naturelle de Paris.

Par suite du caractère des uropodes, lesquels sont biramés, je place cette espèce avec quelque hésitation dans le genre *Ilyarachna*. Elle se rapproche plus d'*I. Plunketti* Tattersall<sup>(1)</sup> que de toute autre espèce du genre. Il est intéressant de noter que Tattersall observa dans son espèce, sur l'article basilaire des uropodes, «un tout petit nodule orné au sommet de soies plumeuses». La présente espèce diffère d'*I. Plunketti* par la forme et la position des épimères des quatre premiers segments thoraciques, par la taille et les proportions des trois derniers segments du thorax et de l'abdomen et par le caractère de la septième paire de pattes.

<sup>(1)</sup> *Fisheries Ireland, Sc. Invest.*, 1904, II, 1905, p. 28-29, 74, pl. VII, fig. 1-9.









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Marine Invertebrates  
DESCRIPTION OF A NEW SPECIES OF  
ISOPOD OF THE GENUS CLEANTIS  
FROM JAPAN

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, United States National Museum

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No. 1883.—From the Proceedings of the United States National Museum,

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# DESCRIPTION OF A NEW SPECIES OF ISOPOD OF THE GENUS CLEANTIS FROM JAPAN

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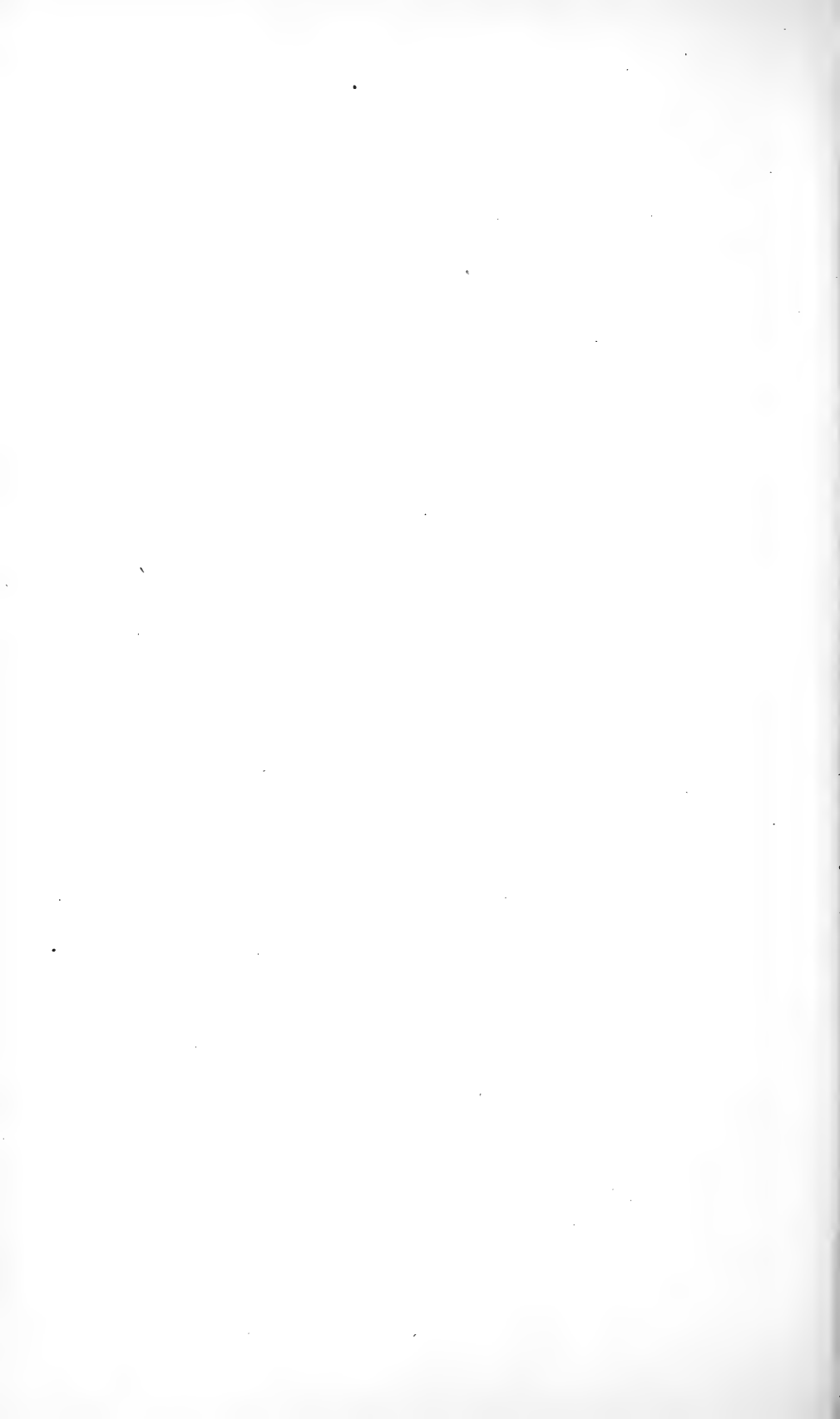
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## DESCRIPTION OF A NEW SPECIES OF ISOPOD OF THE GENUS CLEANTIS FROM JAPAN.

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By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, United States National Museum.*

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The following description is of a new species of Isopod crustacean belonging to the genus *Cleantis*. The single specimen is part of a collection received through Dr. Edward S. Morse from the Imperial University of Tokyo.

Family IDOTHEIDÆ.

Genus CLEANTIS Dana.

CLEANTIS JAPONICA, new species.

Body narrow, elongate, about four and a half times longer than its greatest width,  $18\frac{1}{2}$  mm.: 4 mm. Surface somewhat granulate; color light brown, with longitudinal stripes of dark brown, arranged in five bands, the median and the outer lateral bands being wide, and the inner lateral bands narrow.

The head is  $3\frac{1}{2}$  mm. wide and  $2\frac{1}{2}$  mm. long; its anterior margin is excavate in the center. The eyes are much wider than long, and placed laterally, with only a portion showing in a dorsal view; they are situated on the anterior half of the lateral margin. The first antennæ are composed of four articles, the terminal one of which is the flagellar article; they extend to the end of the second article of the peduncle of the second pair of antennæ. The basal article is furnished with a small tubercle about the center. The second antennæ have the first article of the peduncle short and inconspicuous in a dorsal view; the following four articles have a carinate process along the inner, ventral side. The fourth and fifth articles are subequal and are a little longer than the second and third, which are approximately equal. The flagellum consists of a single clavate article, about the length of the last peduncular article, and a minute terminal one. The maxillipeds have a palp composed of five articles.

The first three and the last three segments of the thorax are subequal in length, each being about  $1\frac{1}{2}$  mm. long; the fourth segment is a little longer than any of the others, being 2 mm. in length. Epimera are present on all the segments except the first; on the second and third segments they are narrow and bilobed and extend only half the length of the lateral margin. They are narrow also on the fourth segment and extend three-fourths the length of the lateral margin. On the last three segments they are wide plates, with the outer post-lateral extremity acutely produced beyond the posterior margin of each segment.

The abdomen is composed of four segments, or three short segments anterior to the long terminal segment. There is a suture on either side of the terminal segment indicating another partly coalesced segment. The terminal segment is 6 mm. long and  $3\frac{1}{2}$  mm. wide; it is rounded posteriorly. On its dorsal side the posterior third portion of the segment is obliquely flattened, and has a large median boss, surmounted by a tubercle.

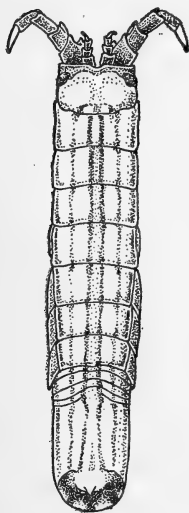


FIG. 1. *CLEANTIS*  
JAPONICA.  $\times 3$ .  
(DRAWN BY MISS V.  
DANDRIDGE.)

The first three pairs of legs are prehensile, the first pair having a larger and more inflated propodus; they are directed anteriorly. The fourth pair of legs is much shorter than any of the others and folds back laterally. The following three pairs are ambulatory, increasing slightly in length and directed posteriorly.

Only one specimen, a female, was collected in Japan.

The type is in the United States National Museum, Cat. No. 43133.

In addition to the new species, two other species of *Cleantis* have been described from Japan, *C. isopus* Miers<sup>1</sup> and *C. strasseni* Thielemann.<sup>2</sup> The present species is, however, closer to *C. occidentalis* Richardson from Magdalena Bay, Lower California. It differs from *C. occidentalis* in lacking the groove on the posterior portion of the anterior part of the terminal abdominal segment, which is elevated above the posterior fourth part of the segment, and in the presence of a boss surmounted with a tubercle in the center of the depressed area at the posterior extremity of the terminal segment.

The narrow, elongate form of the body, with sides almost parallel and the disposition of the legs would seem to place this species among the tube-dwelling forms. *Cleantis tubicola* Thomson was found in a tube formed of a "hollow stem of some marine or littoral plant."

<sup>1</sup> Journ. Linn. Soc. London, Zool., vol. 16, 1883, pp. 80-81, pl. 3, figs. 9-11.

<sup>2</sup> Abhandlungen der math.-phys. Klasse der k. Bayer. Akademie der Wissenschaften, II. Suppl., vol. 3, 1910, pp. 67-69.

*Cleantis planicauda* Benedict, *Cleantis linearis* Dana, *Cleantis granulosa* Heller, and *Cleantis occidentalis* Richardson also have the narrow body and short fourth pair of legs. The tube-dwelling habit is perhaps common to all these species.

Owing to the differences in the shape of the body, which is broader and more flattened, and in the character of the legs, and to the fact that the abdomen is composed of but two segments, *Cleantis isopus* Miers should not be retained in this genus. I suggest a new genus for its reception, with the name *Cleantiella*.

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Marine Invertebrates

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# DESCRIPTION OF A NEW SPECIES OF THE ISOPOD GENUS CASSIDINIDEA FROM MEXICO

BY

HARRIET RICHARDSON

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# DESCRIPTION OF A NEW SPECIES OF THE ISOPOD GENUS CASSIDINIDEA FROM MEXICO

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## DESCRIPTION OF A NEW SPECIES OF THE ISOPOD GENUS CASSIDINIDEA FROM MEXICO.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, United States National Museum.*

Two specimens, representing a new species of *Cassidinidea*, were collected by Dr. Edward Palmer in 1910, at Maron Lagoon, Madre, Mexico. They were found in oysters taken from salt water.

### Family SPHÆROMIDÆ.

#### CASSIDINIDEA TUBERCULATA, new species.

Body ovate, twice as long as wide,  $2\frac{1}{2}$  mm. by 5 mm. Surface smooth except the abdomen, which is covered irregularly with small tubercles. Color white, with numerous arborescent markings of black.

Head wider than long, with the anterior margin widely rounded and produced in a small median point. The eyes are small, round, composite, and placed in the post-lateral angles. The first antennæ have the first and third articles of the peduncle about equal in length, the second somewhat shorter than either of the others. The flagellum is composed of four articles, the last being tipped with hairs. The first antennæ extend just a little beyond the posterior margin of the head. The second antennæ have a flagellum composed of eight articles, the first being twice as long as the second and the last three minute. The second antennæ extend to the middle of the first thoracic segment.

The first segment of the thorax is a little longer than the following six, which are subequal. The lateral margins of the segments are straight. The epimera are not distinct on any of the segments.

The abdomen is composed of two segments, the first of which is short and has suture lines indicating other partly coalesced segments.

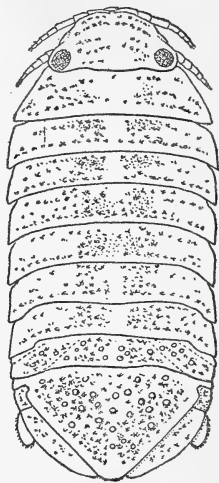


FIG. 1.—CASSIDINIDEA TUBERCULATA.  $\times 12$ .

The terminal segment is triangular with apex rounded. The dorsal surface of both of these segments is covered with small tubercles. The inner, immovable branch of the uropoda extends to the tip of the terminal abdominal segment; it tapers to a rounded extremity.

The outer branch is one-third the length of the inner branch and is posteriorly rounded. Both branches are furnished with hairs.



FIG. 2. — CASSIDINIDEA TUBERCULATA. MAXILLIPED.  $\times 77\frac{1}{2}$ .

Two specimens, both females, were collected by Dr. Edward Palmer in 1910, at Maron Lagoon, Madre, Mexico. They were found in oysters in salt water.

The types are in the United States National Museum, Cat. No. 43193.

The two other described species of this genus from the Atlantic coast of North America are *Cassidinidea ovalis* (Say) and *Cassidinidea*



FIG. 3. — CASSIDINIDEA TUBERCULATA. THIRD PLEOPOD.  $\times 41$ .

*lunifrons* (Richardson) from both of which the present species differs in the more rounded apex of the terminal abdominal segment, and in the presence of tubercles on the abdomen. It differs further from *C. lunifrons* in the shape of the head and in the shape and position of the outer branch of the uropoda.





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DESCRIPTION OF A NEW ISOPOD CRUSTACEAN  
BELONGING TO THE GENUS LIVONECA  
FROM THE ATLANTIC COAST OF PANAMA

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, United States National Museum.

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DESCRIPTION OF A NEW ISOPOD CRUSTACEAN  
BELONGING TO THE GENUS LIVONECA  
FROM THE ATLANTIC COAST OF PANAMA

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, United States National Museum

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DESCRIPTION OF A NEW ISOPOD CRUSTACEAN BELONG-  
ING TO THE GENUS LIVONECA FROM THE ATLANTIC  
COAST OF PANAMA.

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By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, United States National Museum.*

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Two specimens, representing a new species of *Livoneca*, were collected in January, 1911, by Dr. S. E. Meek, of the Field Museum of Natural History, and Mr. S. F. Hildebrand, of the United States Bureau of Fisheries, who were connected with an expedition sent out under the auspices of the Smithsonian Institution for a biological survey of the Panama Canal Zone. The description of the new species is herein given.

*LIVONECA LONGISTYLIS*, new species.

Body ovate, a little more than twice as long as wide, 13 mm.: 6 mm. Color light brown, marked with numerous black dots and arborescent markings.

Head a little wider than long, 2 mm.:  $1\frac{1}{2}$  mm., subtriangular in shape with the front widely rounded. Eyes large, black, ovate, composite, situated in the post-lateral angles of the head and extending from the posterior margin to the middle of the head. The first pair of antennæ are composed of eight articles and extend the length of the last two articles beyond the posterior margin of the head. The second pair are composed of eight articles and are equal in length to the first.

The first, fifth, and sixth segments of the thorax are of equal length, being about  $1\frac{1}{4}$  mm. in length; the second, third, fourth, and seventh segments are subequal, being each about 1 mm. long. The epimera do not quite reach the posterior margin except in the last segment. The thorax becomes gradually wider from the first segment to the fifth, and then becomes gradually narrower again.

The first five segments of the abdomen are short and subequal, each being almost one-half mm. in length, although the first is a little shorter and the fifth a little longer than the other three. The length of all five segments is  $2\frac{1}{4}$  mm. The lateral parts of these segments are pro-

duced into triangular processes. The sixth or terminal segment of the abdomen is as long as wide, 3 mm.: 3 mm., becoming gradually narrower to an obtusely rounded extremity. The color and the markings extend only about half the length of the segment, the terminal half being white and semitranslucent. The peduncle of the uropoda extends half the length of the terminal segment; the branches are long and narrow, with tapering extremities; the outer branch is  $2\frac{1}{2}$  mm. long and extends 1 mm. beyond the tip of the terminal segment; the inner branch is not quite so long as the outer branch and extends only one-half mm. beyond the tip of the abdomen.

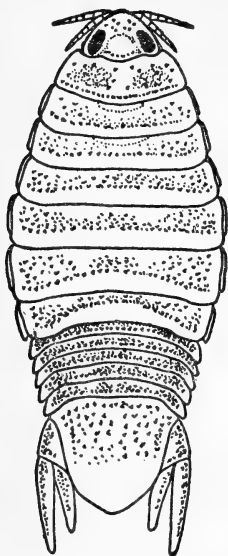


FIG. 1.—LIVONECA LONGISTYLIS, NEW SPECIES. X  $4\frac{1}{2}$ .  
(DRAWN BY MISS V. DAN-  
DRIDGE.)

The legs are all alike, prehensile, with long curved dactyli, the basis not furnished with any carina.

Two adult females were collected at Fox Bay, Colon, Panama, by Dr. S. E. Meek and Mr. S. F. Hildebrand. They were parasitic on *Anchovia browni*, being attached to the abdomen, midway between the base of the pectoral and ventral fins.

This species differs from the other known species of this genus found on the Atlantic coast of North America by its larger eyes, its much longer terminal abdominal segment and much longer and differently shaped uropoda.

The types are in the United States National Museum. (Cat. No. 43350.)





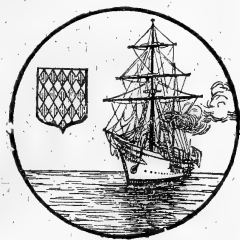
# BULLETIN DE L'INSTITUT OCÉANOGRAPHIQUE

(Fondation ALBERT 1er, PRINCE DE MONACO)

*Munnopsurus arcticus* (n. g. ; n. sp.)

Description d'un nouveau genre d'Isopode  
appartenant à la famille des  
Munnopsidae, de la Nouvelle Zemble.

Par Harriett RICHARDSON.



MONACO

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*Munnopsurus arcticus* (n. g. ; n. sp.)

Description d'un nouveau genre d'Isopode  
appartenant à la famille des  
Munnopsidae de la Nouvelle Zemble.

Par Harriett RICHARDSON.

---

Quelques spécimens représentant un genre nouveau des *Munnopsidae* m'avaient été dernièrement envoyés par le professeur E. L. Bouvier. Ils appartiennent à la collection du Muséum d'Histoire Naturelle de Paris et ils ont été trouvés par M. S. Ivanoff à la Nouvelle Zemble en 1910.

*Munnopsurus* gen. nov.

Partie antérieure du corps pas plus large que la partie postérieure. Première paire d'antennes avec l'article basal très grand. Seconde antenne pourvue d'une écaille ou appendice accessoire sur le troisième article du pédoncule. Mandibules avec l'expansion molaire presque atrophiée et représentée par une petite touffe de soies ; bord tranchant non subdivisé en dents mais grand et obtus. Palpe présent, bien développé. Maxillipèdes avec le quatrième article du palpe sans saillie aiguë, mais grand et avec les bords latéro-interne et antérieur se rencontrant presque à angle droit. Pattes natatoires avec le carpopodite et le propodite grands, renflés, dactylo-podite présent ; deux petites plaques arrondies et plates

sont attachées à la base des 4 paires de pattes antérieures sur le côté ventral de la femelle. Ces lames sont probablement les lames incubatrices. Les uropodes comprennent un pédoncule et deux branches dont chacune se compose d'un seul article.

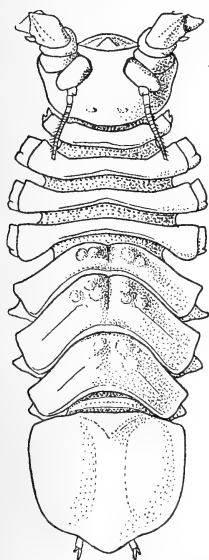


Fig. 1. — *Munnopsurus arcticus*, gen. nov.; sp. nov. L'animal vu par la face dorsale. Grossissement 2 fois 1/12.



Fig. 2. — *Munnopsurus arcticus*. Pédoncule de la première antenne. Grossissement 14,5.

Le type du genre est *Munnopsurus arcticus* n. sp. Ce genre diffère de *Munnopsis* M. Sars qui en est le plus voisin par les uropodes à doubles branches, par la présence des dactylopodites sur les pattes natatoires, par les mandibules dont les expansions molaires sont représentées par une petite touffe de poils et dont le bord tranchant est indivisé, enfin, par le quatrième article du palpe des maxillipèdes qui est prolongé en angle aigu à sa partie interne. Il diffère de tous les genres de la famille par la présence d'une écaille attachée au troisième article du pédoncule de la deuxième antenne. Outre *Munnopsis*, les autres genres déjà décrits sont *Hyarachna* G. O. Sars, *Echinosone* G. O. Sars, *Aspidorachna* G. O. Sars, *Eurycope* G. O. Sars, *Munnopsoides* Tattersall et *Lopomera* Tattersall.

*Munnopsis* ? *Murrayi* Walker \*) a les pattes natatoires pourvues d'un dactylopodite comme dans l'espèce présente mais le caractère des uropodes est le même que celui des espèces typiques, ces appendices ayant deux articles, mais à une seule branche, et non deux branches comme dans l'espèce ici décrite.

\*) Ann. Mag. Nat. Hist. (7), 12. 1903; pp. 227 — 228, pl. xviii, fig. 1-6.



*Munnopsurus arcticus*. sp. nov.

Corps oblong (Fig. 1), ayant environ 25<sup>mm</sup> de long et 10<sup>mm</sup> de large. Tête de 8<sup>mm</sup> dans sa partie la plus large et 4<sup>mm</sup> de longueur depuis le bord antérieur du processus frontal jusqu'au bord postérieur. Bord antérieur de la tête profondément excavé de chaque côté du processus frontal pour la réception des antennes. Processus frontal de 1,5<sup>mm</sup> environ de largeur entre les antennes et dépassant de 2<sup>mm</sup> le point d'excavation du bord antérieur de la tête. Le bord antérieur du processus frontal est



Fig. 3. — *Munnopsurus arcticus*,  
3<sup>me</sup> article basal de la 2<sup>me</sup> antenne montrant l'écaille.  
Grossissement : 19 fois 1/3.

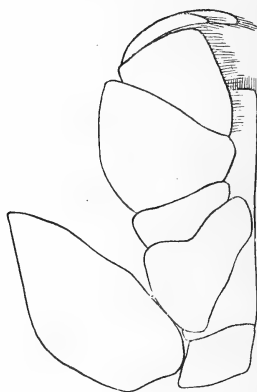


Fig. 4. — *Munnopsurus arcticus*,  
Maxillipède. Grossissement :  
14,5 fois.

faiblement excavé. Les yeux manquent. L'article basal du pédoncule de la première antenne est grand et massif (Fig. 2). Les deux articles suivants sont petits ; le deuxième étant inséré du côté dorsal de l'article basal près de son extrémité distale et muni aussi d'un petit tubercule au côté interne du bord antérieur (Fig. 3). Le flagellum est cassé dans tous les spécimens. Les antennes de la seconde paire ont une écaille mobile ou appendice accessoire, attachée au troisième article

de leurs pédoncules. L'écaïlle est petite et pourvue de poils. Les antennes sont cassées dans tous les spécimens au bout du troisième article pédonculaire. Le quatrième article du palpe des maxillipèdes ne présente pas de saillies aiguës à son extrémité distale interne, mais il a une forme rectangulaire (Fig. 4). Les mandibules (Fig. 5) ont leurs expansions molaires presque



Fig. 5. — Mandibule.  
Grossissement :  
14 fois  $1/2$ .



Fig. 6. — 1<sup>re</sup> Maxille.  
Grossissement :  
14 fois  $1/2$ .



Fig. 7. — 2<sup>me</sup> Maxille.  
Grossissement :  
14 fois  $1/2$ .

nulles, celle-ci n'étant représentées que par une petite touffe de poils. Leurs bords tranchants sont obtus et indivisés ; le palpe est bien développé avec le second article beaucoup plus long que le troisième et deux fois plus long que le premier. Les premières maxilles sont munies, à l'extrémité distale de la lame externe, de 12 épines (Fig. 6) ; 9 de ces épines ayant leurs extrémités obtuses arrondies et en forme de bouton. La lame interne est munie de 3 épines. La deuxième paire de maxilles a aussi sur l'extrémité distale des deux lamelles extérieures, des épines non tranchantes et arrondies (Fig. 7).



Fig. 8. — Uropode.  
Grossissement :  
23 fois.

Le premier segment du thorax est plus étroit que chacun des 6 segments suivants ; il a 6,5<sup>mm</sup> de largeur et ses parties latérales sont prolongées en avant pour entourer la tête. Les 4 premiers segments sont subégaux en longueur dans le milieu de la région dorsale, ils ont 1<sup>mm</sup> de long et chacun

est pourvu d'épimères, lesquelles sont bilobées et s'étendent sur toute la longueur du bord latéral. Les 3 derniers segments du thorax sont plus longs qu'aucun des quatre segments antérieurs et ont leurs parties latérales prolongées en arrière ; le 5<sup>me</sup> segment est un peu plus court que les 2 derniers et a 2,5<sup>mm</sup> de longueur. Le 6<sup>me</sup> et le 7<sup>me</sup> sont subégaux et chacun a 4<sup>mm</sup> de longueur. Les épimères des 3 derniers segments sont situés sur la partie postérieure du bord latéral. Dans la ligne médiane de chacun de ces segments on trouve une rainure avec un groupe de 2 ou 3 petits tubercules surbaissés situés de chaque côté.

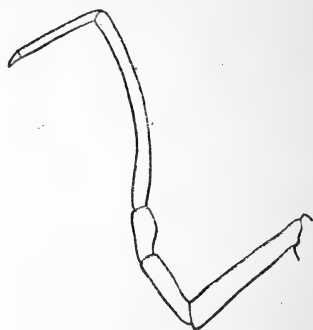


Fig. 9. — 1<sup>re</sup> patte. Grossissement : 5 fois 1/4.

L'abdomen consiste en un seul grand segment terminal précédé par un segment court de 1<sup>mm</sup> de long. Le segment terminal est presque aussi long que large 7<sup>mm</sup> sur 7,5<sup>mm</sup>. Il se prolonge en un lobe arrondi au milieu de son bord postérieur.

Les uropodes sont (Fig. 8) courts, constitués par un pédoncule et deux branches. Le

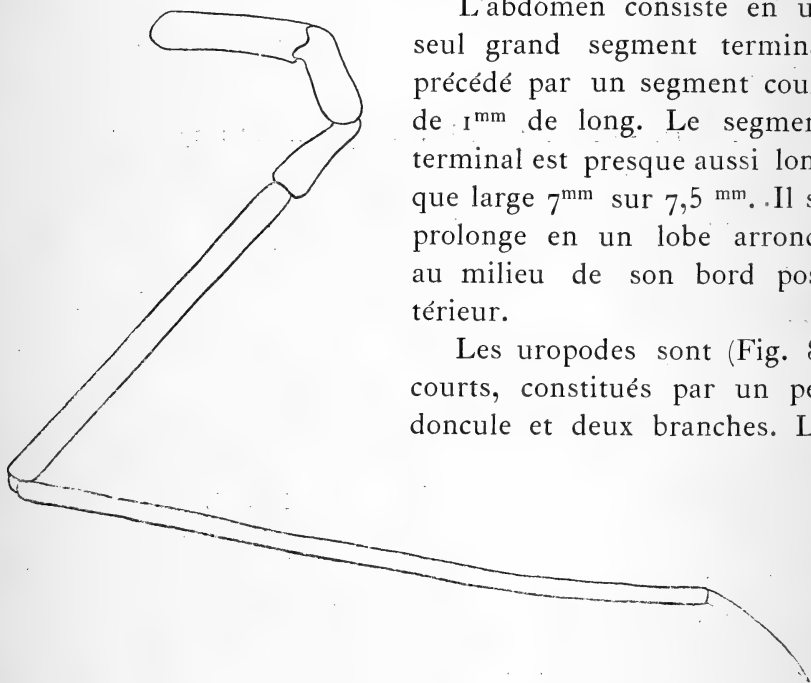


Fig. 10. — 2<sup>me</sup>, 3<sup>me</sup>, 4<sup>me</sup> pattes. Grossissement 4 fois 2/3.

pédoncule a seulement 1<sup>mm</sup> de long dont la moitié est visible du côté dorsal. La branche interne est aussi longue que le

pédoncule. La branche externe n'a que la moitié de la longueur de la branche interne. Toutes les deux ont les extrémités

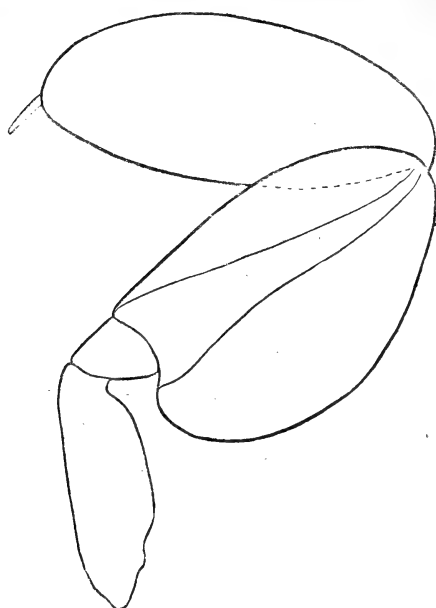


Fig. 11. — Patte natatoire. Grossissement : 19 fois  $\frac{1}{3}$ .



Fig. 12. — 2<sup>me</sup> pléopode du mâle.  
Grossissement : 19 fois  $\frac{1}{3}$ .



Fig. 13. — Operculum  
femelle.  
Grossissement : 3 fois  $\frac{1}{2}$ .

arrondies. Les pattes de la première paire (Fig. 9) sont plus courtes que les trois paires suivantes ; leur base est longue et grêle. Les

3 paires suivantes étaient détachées sur tous les spécimens, mais sont probablement semblables comme longueur et comme caractères à en juger par les bases qui sont pareilles pour toutes, courtes, fortes et de la même longueur (Fig. 10). Il y a une petite plaque mince et arrondie du côté ventral du corps à la base des 4 premières paires de pattes chez la femelle. Les pattes de la 3<sup>me</sup> paire ont les caractères de pattes natatoires avec le carpopodite et le propodite élargis et dilatés (Fig. 11 et fig. 12) ; un petit dactylopodite se trouve sur toutes les 3 paires. L'opercule de la femelle (Fig. 13) a une carène qui s'étend tout le long de la ligne médiane jusqu'à un point placé vers le centre où elle se bifurque en deux carènes divergentes. 4 spécimens incomplets ont été recueillis par M. S. Ivanoff en 1910 à la Nouvelle Zemble. Tous les spécimens sont cassés en deux parties au milieu du corps et la plupart des appendices étaient détachés. Le type se trouve au Muséum d'Histoire naturelle de Paris.

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# MARINE AND TERRESTRIAL ISPODS FROM JAMAICA

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Collaborator, Division of Marine Invertebrates, United States National Museum

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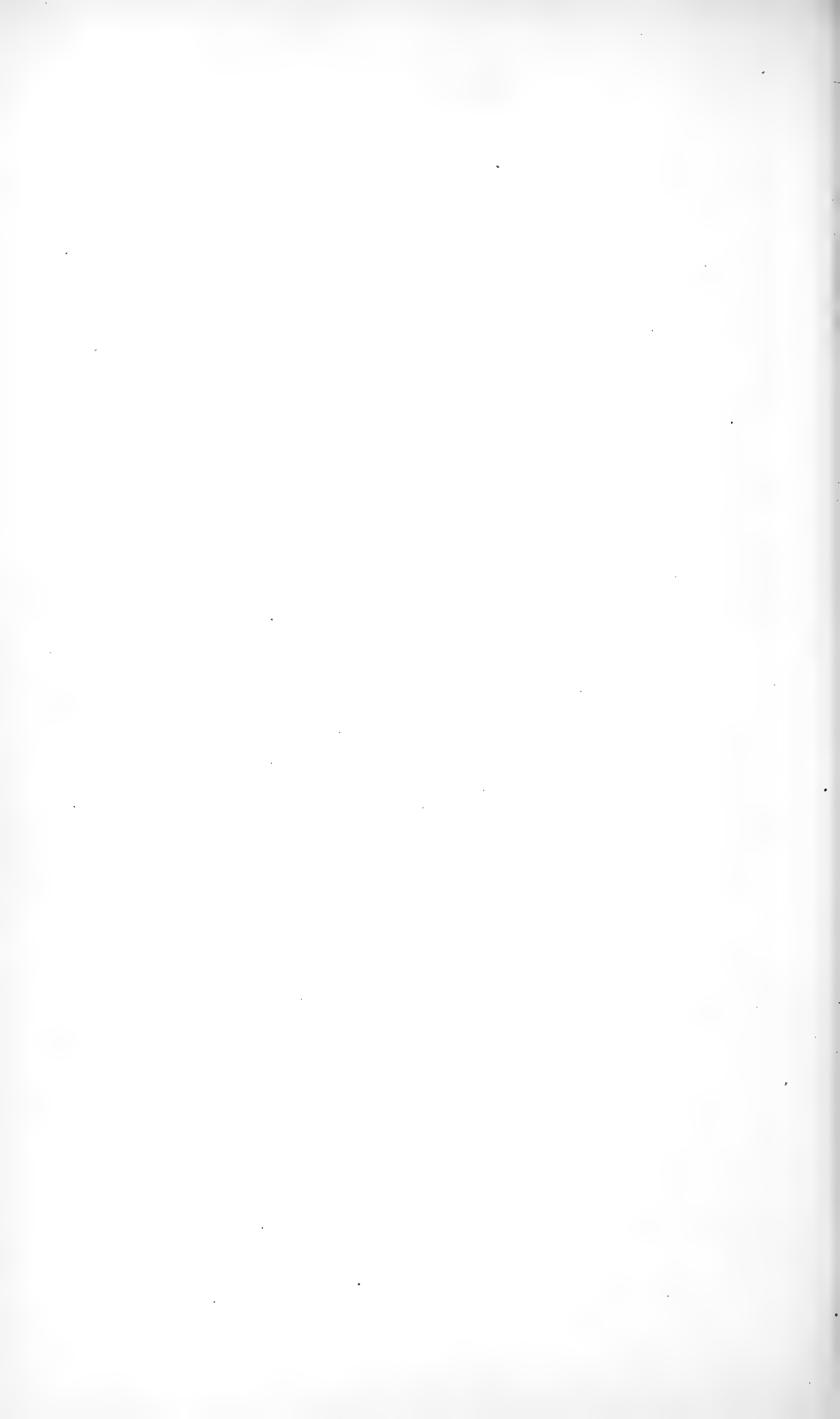
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# MARINE AND TERRESTRIAL ISOPODS FROM JAMAICA.

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## MARINE ISOPODS.

While working in the Johns Hopkins laboratory at Montego Bay, Jamaica, in 1910, Dr. C. B. Wilson and Dr. E. A. Andrews collected a large number of isopods for the United States National Museum. A list of the species is herein given with notes on the variation of *Exocorallana tricornis* (Hansen) and *Exocorallana quadricornis* (Hansen). The notes on the color markings were furnished by Doctor Wilson. A new species of *Exosphæroma* was collected by Doctor Andrews, the description of which is given below.

### Family TANAIDÆ.

#### LEPTOCHELIA DUBIA (Krøyer).

*Tanais dubius* KRØYER, Nat. Tidsskr., vol. 4, 1842, p. 178, pl. 2, figs. 20-22.

*Leptochelia dubia* RICHARDSON, Trans. Conn. Acad. Sci., vol. 11, 1902, p. 279.

*Leptochelia incerta* MOORE, Bull. U. S. Fish Comm., vol. 20, pt. 2, 1900, pp. 165-166.

*Locality*.—Bathing Beach, Montego Bay. (Collected by E. A. Andrews.) Five specimens.

### Family GNATHIIDÆ.

#### GNATHIA, species ?

*Locality*.—Montego Bay. A number of larvæ from gills of Jack (*Caranx crysos*) and from the mouth of a Yellow Jack. (Collected by C. B. Wilson.)

### Family CIROLANIDÆ.

#### CIROLANA PARVA Hansen.

*Cirolana parva* HANSEN, Vidensk. Selsk. Skr. (6), vol. 5, 1890, pp. 340-341, pl. 2, figs. 6-6b; pl. 3, figs. 1-1d.—MOORE, Bull. U. S. Fish Comm., vol. 20, pt. 2, 1900, p. 167, pl. 8, figs. 6-8.—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 111-114.

*Locality*.—Bogue Islands, Montego Bay. About 25 specimens. Found living upon mangrove roots. (Collected by E. A. Andrews.)

## Family EXOCORALLANIDÆ.

## EXOCORALLANA QUADRICORNIS (Hansen).

*Corallana quadricornis* HANSEN, Vidensk. Selsk. Skr. (6), vol. 5, 1890, p. 382, pl. 7, fig. 3.

*Locality*.—Bogue Islands, Montego Bay. Two specimens. Commensal in black ascidian on mangrove roots. The color is gray-white with a pattern of light-brown stripes and spots. (Collected by C. B. Wilson.)

Also about 25 specimens, found living in burrows in a bright red sponge on mangrove roots. These have the horns on the head very large. The color is white with a light-brown pattern over the dorsal surface, just as in the preserved specimens (collected by C. B. Wilson); three specimens were taken from a red sponge on mangrove roots. (Collected by E. A. Andrews.)

## EXOCORALLANA TRICORNIS (Hansen).

*Corallana tricornis* HANSEN, Vidensk. Selsk. Skr. (6), vol. 5, 1890, pp. 379-381, pl. 6, figs. 4-4p; pl. 7, figs. 1-1d.—MOORE, Bull. U. S. Fish Comm., vol. 20, pt. 2, 1900, p. 169, pl. 9, figs. 2-5.

*Localities*.—Montego Bay and White Rock.

Of the specimens from Montego Bay, there was 1 specimen, parasitic on hog-fish, *Lachnolaimus maximus*; about 10 specimens, parasitic on yellow-tail (*Ocyurus chrysurus*); about 10 specimens, parasitic on green parrot-fish (*Sparisoma viride*)—these have the horns on the head small; 8 specimens, parasitic on red snapper (*Neomænis aya*). The color is snow-white, the dorsal surface with spots and lines of dark blue-black; eyes brown; egg masses brown at first, later changing to dark blue-black. About 23 specimens, parasitic on yellow-jack (*Caranx crysos*); about 75 specimens, parasitic in mouth of yellow-jack (*Caranx crysos*); about 50 specimens, parasitic in eye sockets and mouth of rock-fish (*Mycteroperca boweri*). The color is white with an open pattern of light brown over the dorsal surface, thinning to separate spots along the lateral margins; the egg mass is at first pale yellow-brown, deepening with development until it becomes almost jet-black; the eyes are dark brown. One specimen, parasitic in the gill cavity of the red snapper (*Neomænis aya*); about 30 specimens, parasitic in mouth of a 20-pound red snapper (*Neomænis aya*). The horns on the head are very small. The color is whitish, the cartilage gray, with the dorsal pattern in light cinnamon-brown; the eggs are light brown; the eyes are dark brownish-black. Three specimens, parasitic on the green parrot-fish (*Sparisoma viride*); 4 specimens, parasitic on French grunt (*Hæmulon flavolineatum*); 1 specimen, parasitic on gills of jack (*Caranx hippos*); 1 specimen, parasitic on barracuda (*Sphyræna barracuda*); 8 specimens, from eye sockets and mouth of the large blue parrot-fish (*Scarus cæruleus*). The color of large females with eggs is white, with a row of star-shaped brown spots across the center of each thoracic segment on the dorsal surface, the abdomen with a wash of faint brown over the entire


dorsal surface; the egg mass is a bright green-blue; the eyes are brown. In the younger, or smaller individuals the star-shaped marks are confluent over the whole surface of the thorax and abdomen. The horns between eyes are very small. The frontal horn is large and broad, rounded. The eyes are large and close together. Twelve specimens, parasitic on lane snapper (*Neomænis synagris*). The color is white, the dorsal surface with one or two rows of brown star-shaped spots across each segment; the eyes are dark blue-black. The frontal horn is very large, rounded, produced, upturned. The eyes of both sexes are large and close together. Eight specimens, parasitic in eye sockets of the yellow-tail (*Ocyurus chrysurus*). The color is light brownish-yellow, with a row of brown star-shaped spots across each segment on the dorsal surface; the eyes are dark seal-brown; the egg masses are a bright salmon-pink. All the horns on the head are small, the two posterior ones almost obsolete. The eyes in both sexes are very large and close together. Four specimens, parasitic in the eyes of the yellow-tail (*Ocyurus chrysurus*). The color is a light yellowish-white, each segment with a single row of brown spots across the dorsal surface. The eyes are very large and close together, almost confluent in one specimen. One specimen, from the fins of the sea-percupine (*Diodon hystrix*). The color is gray-white, with a row of brown star-shaped spots across the dorsal surface of each segment; the eyes are dark brown. This is probably an immature female. (Collected by C. B. Wilson.)

One specimen from White Rock, from the gill cavity of the rock-hind (*Epinephelus adscensionis*). The color of the ventral surface is white, of the dorsal surface white, nearly covered with a loose pattern of light reddish-brown; the eyes are black; the claws on the tips of the legs red-brown; the legs themselves white.

### Family ÆGIDÆ.

#### ROCINELA SIGNATA Schiedte and Meinert.

*Rocinela signata* SCHIEDTE and MEINERT, Nat. Tidsskr. (3), vol. 12, 1879-80, pp. 399-401, pl. 13, figs. 3-6.—MOORE, Bull. U. S. Fish Comm., vol. 20, pt. 2, 1900, p. 171, pl. 10, fig. 2.—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 209-210.

*Locality*.—Montego Bay; parasitic on the French grunt (*Hæmulon flavolineatum*). The color is beautifully variegated in delicate shades of brown, pink, and gray. The head and first three segments and the abdomen are delicate pink with fine dots and lines of red-brown on the dorsal surface; the remaining thoracic segments are a light olive-gray, with variegated spots, lines, and blotches of dark olive-green, the fourth segment with a prominent wide transverse band of dark brown spots; all the segments have a narrow band of red-brown on the lateral margins; the telson has a central crescent of black spots shaped like this ; the eyes light pink; the egg mass is jet-black.

A second specimen was found parasitic on the parrot-fish (*Sparisoma abildgaardi*); it had small spots of brownish purple on the dorsal surface.

A fragment was found parasitic on the hog-fish (*Lachnolaimus maximus*). (Collected by C. B. Wilson.)

### Family CYMOTHOIDÆ.

#### ANILOCRA LATICAUDA Milne Edwards.

*Anilocra laticauda* MILNE EDWARDS, Hist. Nat. Crust., vol. 3, 1840, p. 259.

*Anilocra mexicana* SAUSSURE, Rev. Mag. Zool., 1857, p. 505.

*Anilocra leachii* (KRØYER) SCHIØDTE, Nat. Tidsskr. (3), vol. 4, 1866, p. 205, pl. 11, figs. 2a-2g.

*Anilocra laticauda* SCHIØDTE and MEINERT, Nat. Tidsskr. (3), vol. 13, 1881-83, pp. 126-131, pl. 11, figs. 1-3.—MOORE, Bull. U. S. Fish Comm., vol. 20, pt. 2, 1900, p. 172, pl. 10, figs. 3-4.—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 227-228.

*Locality*.—Montego Bay; one female; parasitic on the parrot-fish. The color is dark slaty-blue, uniform throughout. (Collected by C. B. Wilson.) One female; parasitic on the eye of the yellow-tail (collected by C. B. Wilson). The color is uniform gray-white, the brown mark due to partial drying in the sun. One male; found attached to outside of cheek at the angle of the jaw of *Bathystoma rimator* (collected by C. B. Wilson). The color is light brown above, deeper toward the lateral margins and on the posterior pair of appendages (telson); the eyes are white with a small black dot in the center of each facet. The respiratory lamellæ have a fine penciling of brown lines, thicker and darker in color near the outer margins. One male; parasitic on *Bathystoma rimator* (collected by C. B. Wilson). One female (collected by E. A. Andrews). One female; from a small yellow-tail (collected by E. A. Andrews).

#### CYMOTHOA ŒSTRUM (Linnaeus).

*Oniscus œstrum* LINNÆUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 636, No. 2; Fauna Suecica, ed. 2, 1761, p. 499, No. 2053; Syst. Nat., ed. 12, vol. 1, 1767, pt. 2, p. 1059, No. 2.

*Asellus œstrum* OLIVIER, Encycl. Method., vol. 4, 1789, p. 253.

*Cymothoa œstrum* FABRICIUS, Entom. Syst., vol. 2, 1798, p. 505, No. 6.—LEACH, Trans. Linn. Soc. London, vol. 11, 1815, p. 372; Dict. Sci. Nat., vol. 12, 1818, p. 352.

*Cymothoa dufresnei* LEACH, Dict. Sci. Nat., vol. 12, 1818, p. 352.

*Cymothoa immersa* SAY, Journ. Acad. Nat. Sci. Phila., vol. 1, 1818, pp. 399-400.

*Cymothoa œstrum* DESMAREST, Cons. Gén. Crust., 1825, p. 309, pl. 48, figs. 6-7.—MIERS, Proc. Zool. Soc. London, 1877, pp. 671-672.—SCHIØDTE and MEINERT, Nat. Tidsskr. (3), vol. 14, 1883-84, pp. 271-279, pl. 8, figs. 5-13.—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 254-256.

*Locality*.—Montego Bay; one male; parasitic on parrot-fish (*Sparisoma abildgaardi*). The color is a uniform yellowish-gray. (Collected by C. B. Wilson.)



## Family SPHÆROMIDÆ.

## EXOSPHEROMA CRENULATUM (Richardson).

*Sphæroma crenulatum* RICHARDSON, Trans. Conn. Acad. Sci., vol. 11, 1902, pp. 292-293, pl. 39, fig. 40; Bull. U. S. Nat. Mus., No. 54, 1905, p. 298.

*Locality*.—Montego Bay; 2 specimens; living on the outside of a chiton. (Collected by C. B. Wilson.)

## EXOSPHEROMA ANTILLENSE, new species.

Body contractile, able to roll into a complete ball; surface reticulate; color yellow, with a few scattered spots of brown; on the head are three arcuate patches of brown; on the first segment there is a transverse band of brown about the middle of the segment; on the second segment are two small transversely elongated patches of brown on either side of the median line situated close together; on the fourth segment are four patches, two on either side of the median line, the two middle ones being far apart; on the fifth, sixth, and seventh segments are two patches on each segment, one on either side of the median line; on the first abdominal segment are two patches in longitudinal series on either side of the median line and three patches in longitudinal series on the lateral parts of the segment; on the terminal abdominal segment are two patches, one on either side of the median line, situated close together.

The head is wider than long and has the front produced in a small median point. The eyes are small, composite, more or less ovate with the upper end produced angularly, and situated in the post-lateral angles of the head. The first pair of antennæ have the first article large, and elongate, about twice as long as wide; the second article is small and rounded, and is about one-third the length of the first article; the third article is narrow, elongate, and is about one-and-a-half times the length of the second article; the flagellum, composed of eleven articles, extends about two-thirds the length of the lateral margin of the first thoracic segment. The second antennæ, with a flagellum composed of twelve articles, extend to the posterior margin of the third thoracic segment.

The first segment of the thorax is a little longer than any of those following and has the post-lateral angles produced backward and the antero-lateral angles produced forward on either side of the head. The following six segments are subequal.

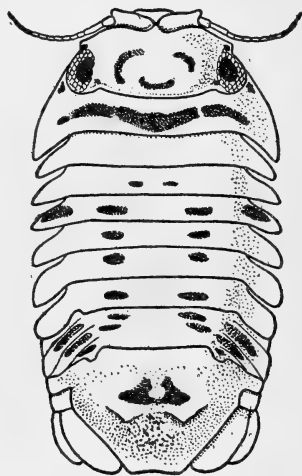


FIG. 1.—EXOSPHEROMA ANTILLENSE.  
× 84.

The abdomen is composed of two segments, the first with three suture lines on either side indicative of other partly coalesced segments. The second or terminal segment is produced to an extremity which is somewhat truncate, with a slight emargination in the middle. On the dorsal surface are two large, elevated tubercles, one on either side of the median line. The uropoda do not extend beyond the apex of the terminal segment of the abdomen; both branches are similar in shape, posteriorly rounded, but the outer one is shorter, extending only two-thirds the length of the inner branch.

The legs are all alike, ambulatory.

Only one specimen was collected by E. A. Andrews at Montego Bay. It was dredged off the bathing beach.

*Type*.—Cat. No. 43349, U.S.N.M.

As the specimen was completely rolled up into a ball, it was impossible to get at the pleopods without injuring it.

#### DYNAMENE MOOREI Richardson.

*Dynamene perforata* MOORE (female), Bull. U. S. Fish Comm., vol. 20, pt. 2, 1900, pp. 173-174, pl. 10, fig. 10.—RICHARDSON (female), Trans. Conn. Acad. Sci., vol. 11, 1902, pp. 291-292.

*Dynamene moorei* RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, p. 303.

*Locality*.—Snug Harbor, Montego Bay; about 17 specimens; found under girdle of chitons taken at tide line. (Collected by E. A. Andrews.)

#### TERRESTRIAL ISOPODS.

The following isopods were collected in Jamaica by Dr. Thomas Barbour.

#### Family ONISCIDÆ.

##### PORCELLIO LÆVIS Latreille.

*Porcellio lævis* LATREILLE, Hist. Nat. Crust. et Insectes, vol. 7, 1804, p. 46; Genera Crustaceorum et Insectorum, vol. 1, 1806, p. 71.—LEACH, Edinb. Encycl., vol. 7, 1813-14, p. 406; Trans. Linn. Soc. London, vol. 11, 1815, p. 375.—MILNE EDWARDS, Hist. Nat. Crust., vol. 3, 1840, p. 169.—BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 138-141 (see Budde-Lund for further synonymy).—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 614-616.

*Locality*.—Mandeville; about 75 specimens.

##### PORCELLIONIDES PRUINOSUS (Brândt).

*Porcellio pruinus* BRANDT, Bull. Soc. Imp. Naturalistes de Moscou, vol. 6, 1833, p. 19.

*Metoponorthus pruinus* BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 169-171 (see Budde-Lund for synonymy).—DOLLFUS, Bull. Soc. Zool. France, vol. 18, 1893, p. 187.—G. O. SÆRS, Crust. Norway, vol. 2, 1899, pp. 184-185, pl. 80, fig. 2.—CHILTON, Trans. Linn. Soc. Lond. (2), vol. 8, 1901, p. 141.—STOLLER, 54th Report New York State Mus., 1902, p. 213.—PAULMIER, Bull. New York State Museum, 1905, pp. 183-184.—RICHARDSON, Bull. U. S. Nat. Mus., No. 54, 1905, pp. 627-629.

*Porcellionides pruinus* STEBBING, Records of the Indian Museum, vol. 6, pt. 4, No. 12, 1911, p. 189.

*Locality*.—Mandeville; about 75 specimens.

## Family ARMADILLIDIDÆ.

*CUBARIS JAMAICENSIS*, new species.

Body ovate, nearly twice as long as wide,  $9\frac{1}{2}$  mm. by 5 mm. Head and dorsal portion of the thoracic segments covered with low tubercles. The tubercles on each segment are arranged in a transverse row of four about the middle with a group on either side of about nine. On the first segment the lateral groups are composed of about eleven tubercles, and there are also two low tubercles on the anterior portion of the middle dorsal region, one on either side of the median line. There are two tubercles on the terminal abdominal segment, one on either side of the median line at the base of the segment. The color is brown, with a median row of light spots, one on the anterior portion of each segment. There is also a group of light spots on each segment under the lateral group of tubercles.

The head is wider than long,  $2\frac{1}{2}$  mm.: 1 mm., with the frontal margin straight and forming a narrow border. The eyes are small, round, and composite. The first pair of antennæ are rudimentary and inconspicuous. The second pair have the first article short; the second about three times as long as the first; the third about twice as long as the first; the fourth is about as long as the second; the fifth is a little longer than the fourth. The flagellum is composed of two articles, the second of which is about three times as long as the first. The prosepistoma is flat.

The first segment of the thorax is about twice as long in the median line as any of those following, which are subequal. The lateral parts of this segment are upturned, the dorsal surface being concave. The lateral parts of the second, third, and fourth segments are produced in narrow processes with rounded extremities. The lateral margins of the last three segments are nearly straight. Coxopodites are present on the first two segments on the under side. On the first segment they occupy only the posterior half of the lateral margin and are smaller than the lateral part of the segment, being narrower and shorter. The coxopodites of the second segment are small dentiform processes, obliquely placed some distance from the lateral margin.

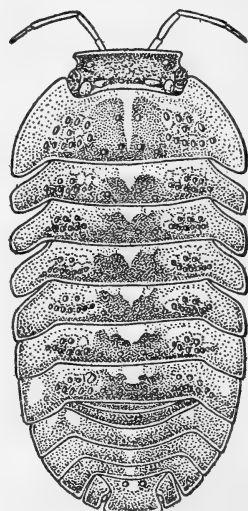


FIG. 2.—*CUBARIS JAMAICENSIS*.  
× 6 $\frac{1}{2}$ .



FIG. 3.—*CUBARIS JAMAICENSIS*. UNDER SIDE OF HEAD AND FIRST TWO SEGMENTS OF THORAX SHOWING COXOPODITES.

narrower and shorter. The coxopodites of the second segment are small dentiform processes, obliquely placed some distance from the lateral margin.

The first five segments of the abdomen are short and subequal, the first being a little shorter than any of the others. The lateral parts of the first and second segments are covered by the seventh thoracic segment. The sixth or terminal segment is constricted in the middle, and has the posterior margin truncate. The peduncle of the uropoda occupies the space between the terminal segment and the lateral part of the fifth segment. The inner branch is short, not reaching to the extremity of the terminal abdominal segment by some distance. The outer branch is minute and is situated about the middle of the inner margin of the peduncle.

About 30 specimens were collected at Mandeville by Dr. Thomas Barbour.

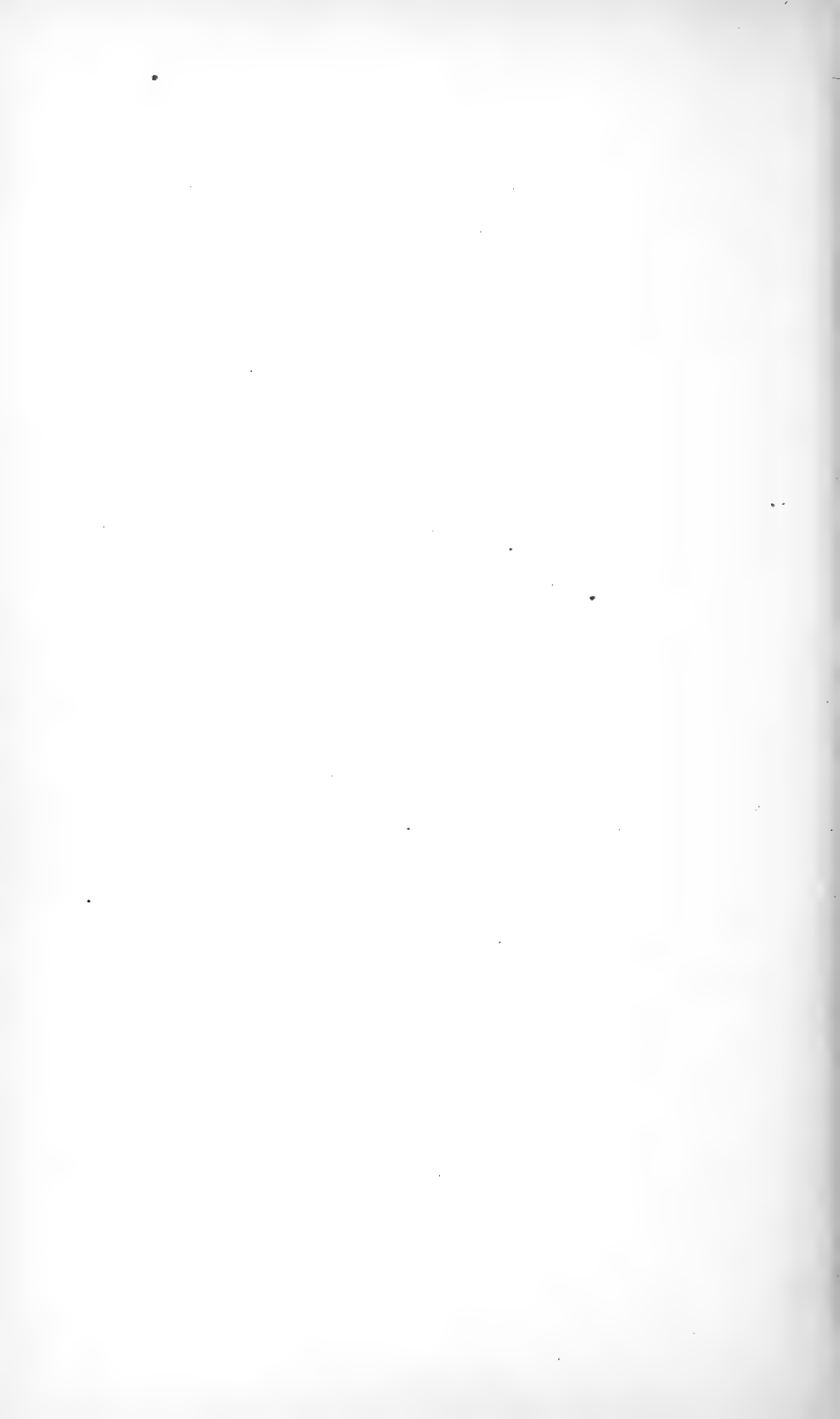
Types in the Museum of Comparative Zoölogy; cotypes in the United States National Museum.

This species is closer to *Cubaris silvarum* (Dollfus)<sup>1</sup> than to any other described species. It differs from that form in not having the coxopodites of the first thoracic segment distinct on the entire length of the edge, in having the coxopodite of the second segment smaller and more distant from the lateral margin, and in having the tubercles on the body more distinct and differently arranged.

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<sup>1</sup> Proc. Zool. Soc. London, 1896 pp. 393-394.











# DESCRIPTION OF A NEW TERRESTRIAL ISOPOD BELONGING TO THE GENUS CUBARIS FROM PANAMA

BY

HARRIET RICHARDSON

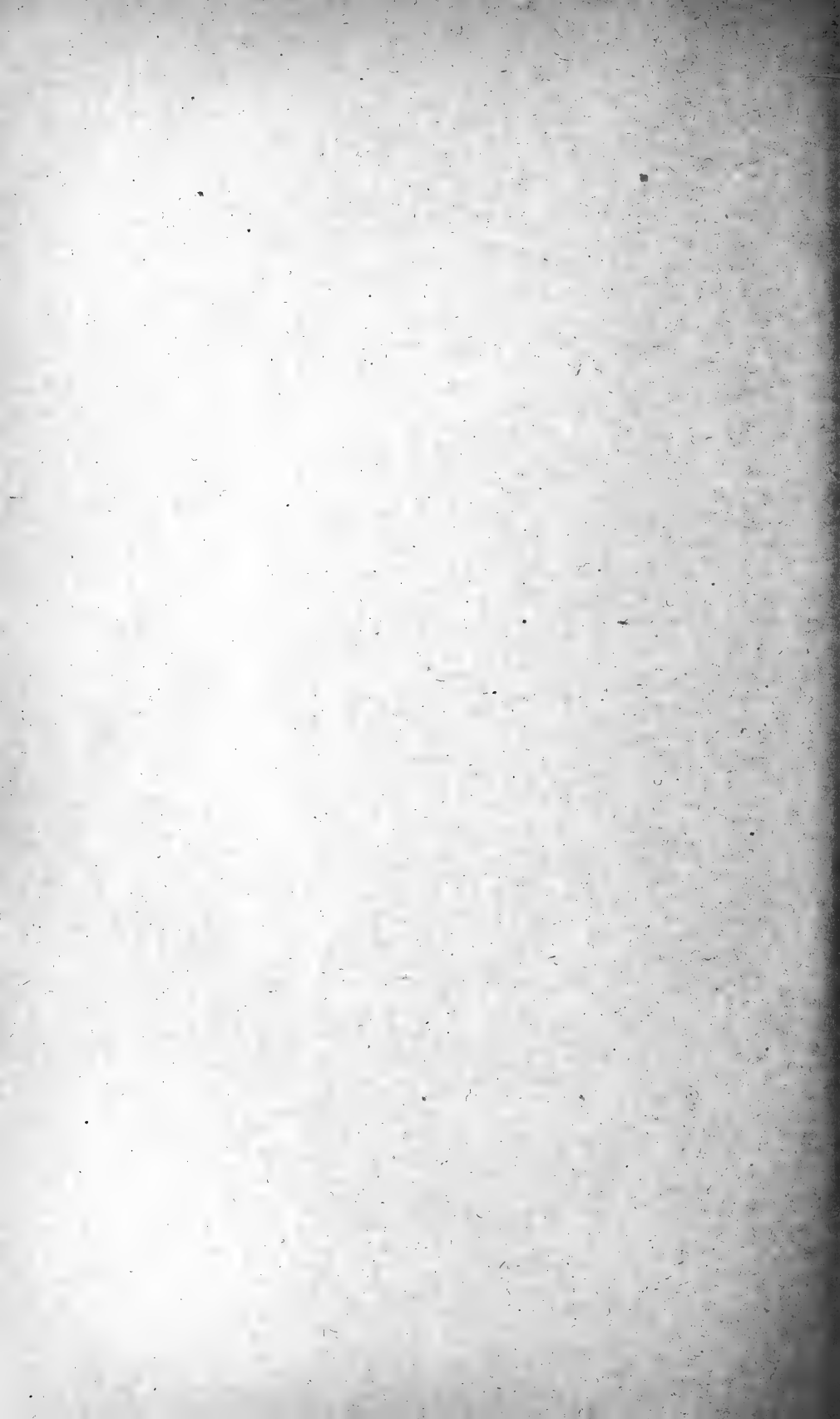
Collaborator, Division of Marine Invertebrates, United States National Museum

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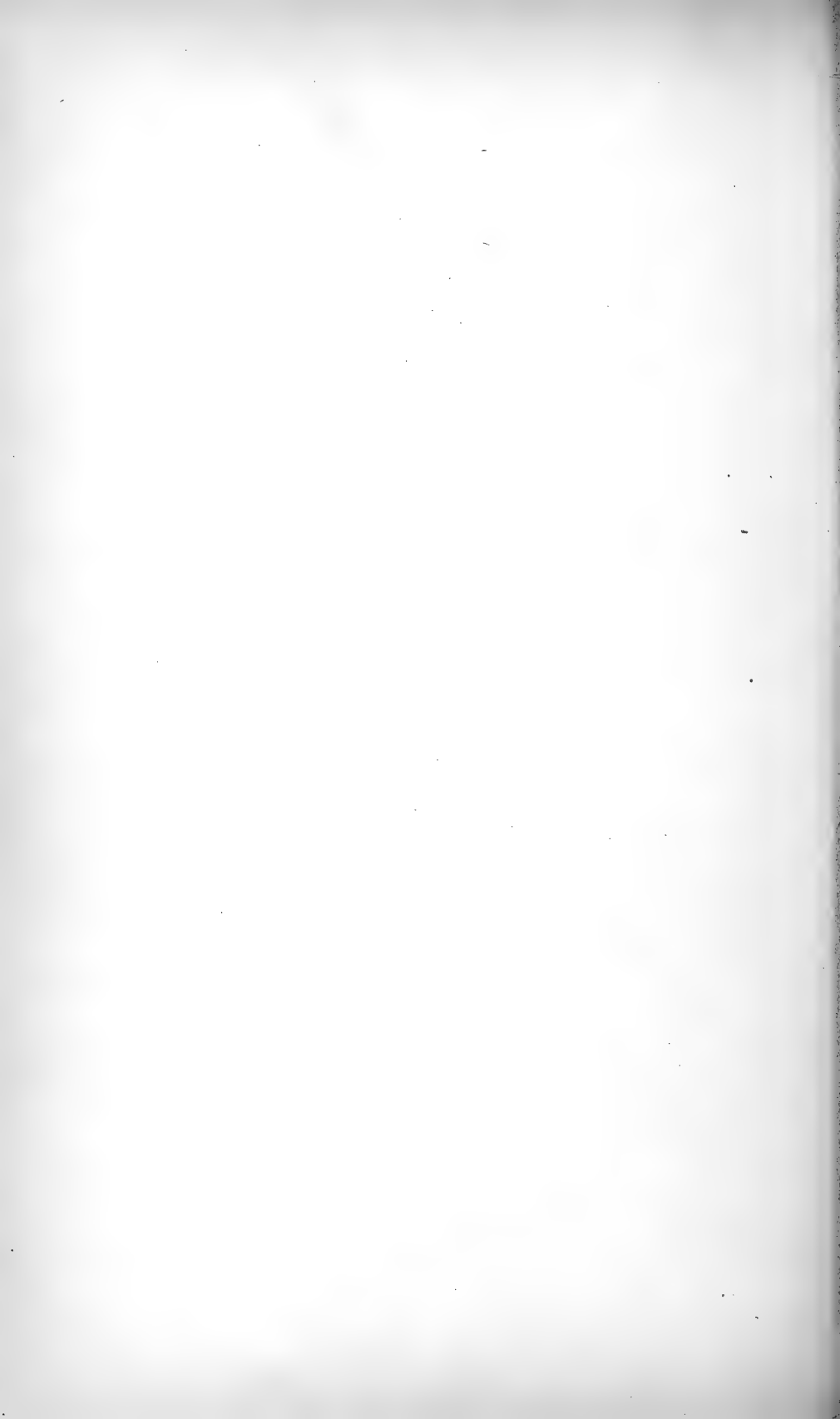
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## DESCRIPTION OF A NEW TERRESTRIAL ISOPOD BELONG- ING TO THE GENUS CUBARIS FROM PANAMA.

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By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, United States National Museum.*

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Two specimens of an isopod, representing a new species of *Cubaris*, were collected by Mr. E. A. Schwarz at Porto Bello, Panama, where he found it to be very abundant. Mr. Schwarz says that he "frequently beat it down on his umbrella from bushes or trees after heavy showers and during the drier weather it was to be found under rubbish on the ground. Smaller specimens were also seen but not collected. The species was not seen in the Canal Zone proper."

### CUBARIS LONGISPINIS, new species.

Body contractile, capable of being rolled into a ball; dorsal surface covered with long spines; color brown, mottled with yellow.

Head wider than long; front slightly excavate in the middle, the antero-lateral angles produced and rounded; eyes small, round, composite, situated close to the lateral margin, half way between the anterior and posterior margins. Just back of the anterior margin is a row of four short spines, two on either side of the median line, the two outer being slightly longer than the two inner. (See fig. 1.) Close to the posterior margin is a row of six long spines, three on either side of the median line, the two outer and the two inner being longer than the others. Between the two rows of spines are two small spines, one on either side of the median line. Altogether there are twelve spines on the head. First antennæ small and inconspicuous; second antennæ with a flagellum composed of two articles, the second of which is twice as long as the first.

First segment of the thorax, with the lateral parts large and expanded, the antero-lateral angles extending forward as far as the antero-lateral angles of the head, the post-lateral angles being

rounded; dorsal surface of lateral parts concave, with the margins produced laterally. There are thirteen spines on the first segment. Close to the anterior margin are two short spines, one on either side of the median line. There is a row of eight long spines at about the

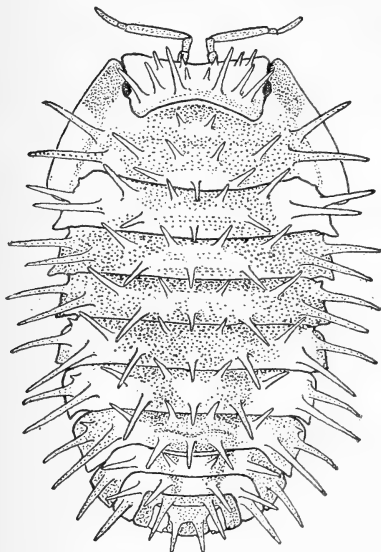


FIG. 1.—*CUBARIS LONGISPINIS*.  $\times 10$ .

middle of the segment, four on either side of the median line. Close to the posterior margin is a row of three spines, one in the median line with one on either side. The coxopodites of this segment extend one-half the length of the lateral margin on the underside, are unequally cleft, and are situated some distance from the edge; they are posteriorly rounded. (See fig. 2.) Each of the following six segments is armed with eleven spines, arranged in an anterior row of eight, four on either side of the median line and a posterior row of three, one in the median line with one on either side. On the third to the seventh segments is an additional small spine on either side at the base of the outermost lateral spine. The lateral parts of the second, third, and fourth segments are drawn out laterally in narrow, acutely ending processes; those of the fifth and sixth segments are wider, and produced downward; those of the seventh are the width of the segment, with only the posterior angle acutely produced. The coxopodites of the second segment are present on the underside, some distance from the edge, and are rounded plates.

First segment of the abdomen entirely concealed; second segment short, with the lateral parts covered by those of the seventh thoracic segment; it is unarmed; third and fourth segments furnished each with a row of six spines, three on either side of the median line, the outermost being placed on the lateral portion of the segment; fifth and sixth segments each provided with two spines, one on either side of the median line; sixth or terminal segment constricted about the middle and truncate posteriorly; peduncle of the uropoda occupying the space between the sixth segment and the lateral parts of the fifth; outer branch minute and placed at the inner post-lateral angle of the peduncle; inner branch short and not quite reaching the extremity of the sixth abdominal segment (seen from the underside).



FIG. 2.—*CUBARIS LONGISPINIS*. UNDERSIDE OF FIRST AND SECOND THORACIC SEGMENTS SHOWING COXOPODITES.  $\times 10$ .

The legs are all alike, ambulatory.

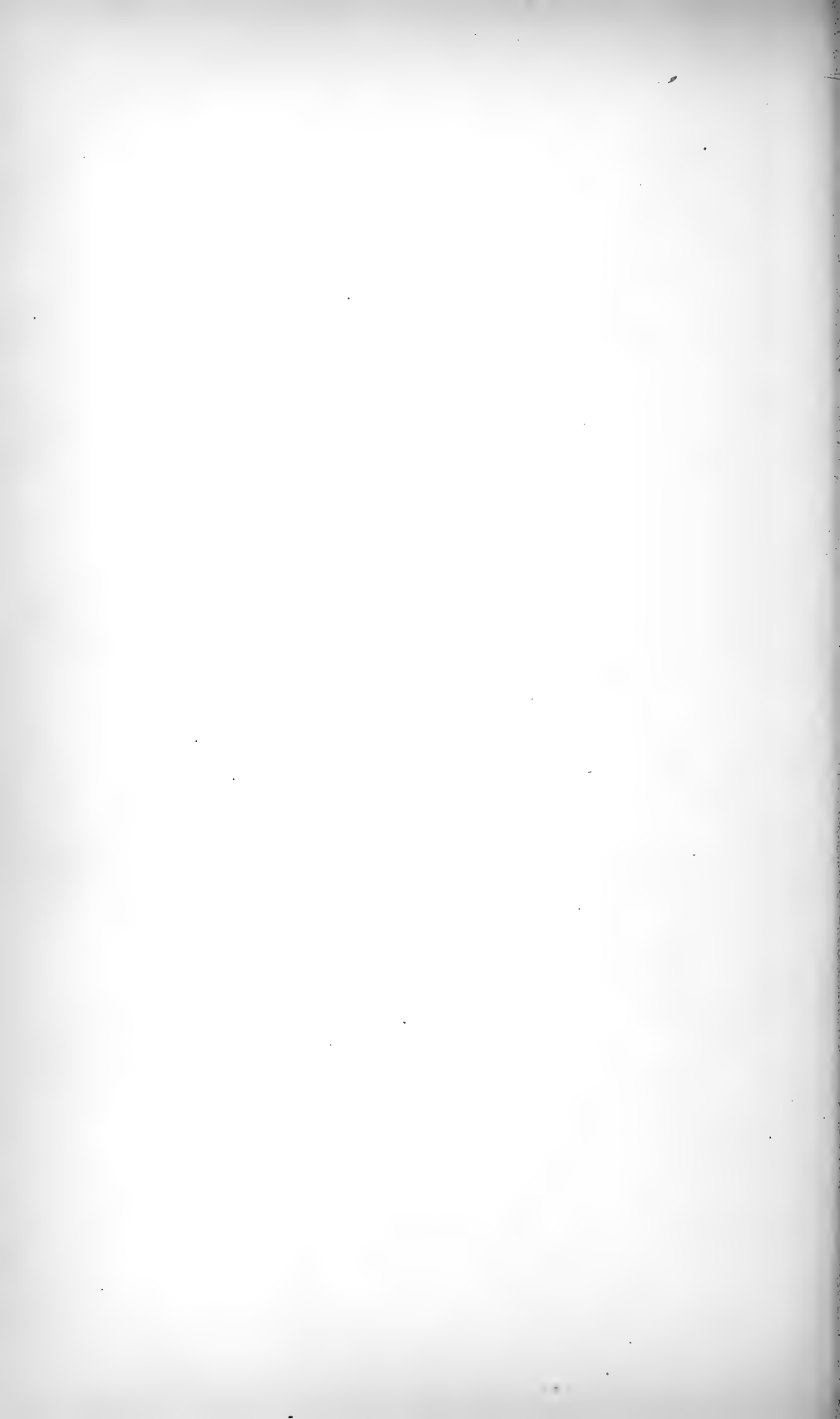
Only two specimens were collected by Mr. Schwarz at Porto Bello, Panama.

The types are in the United States National Museum, Cat. No. 43501.

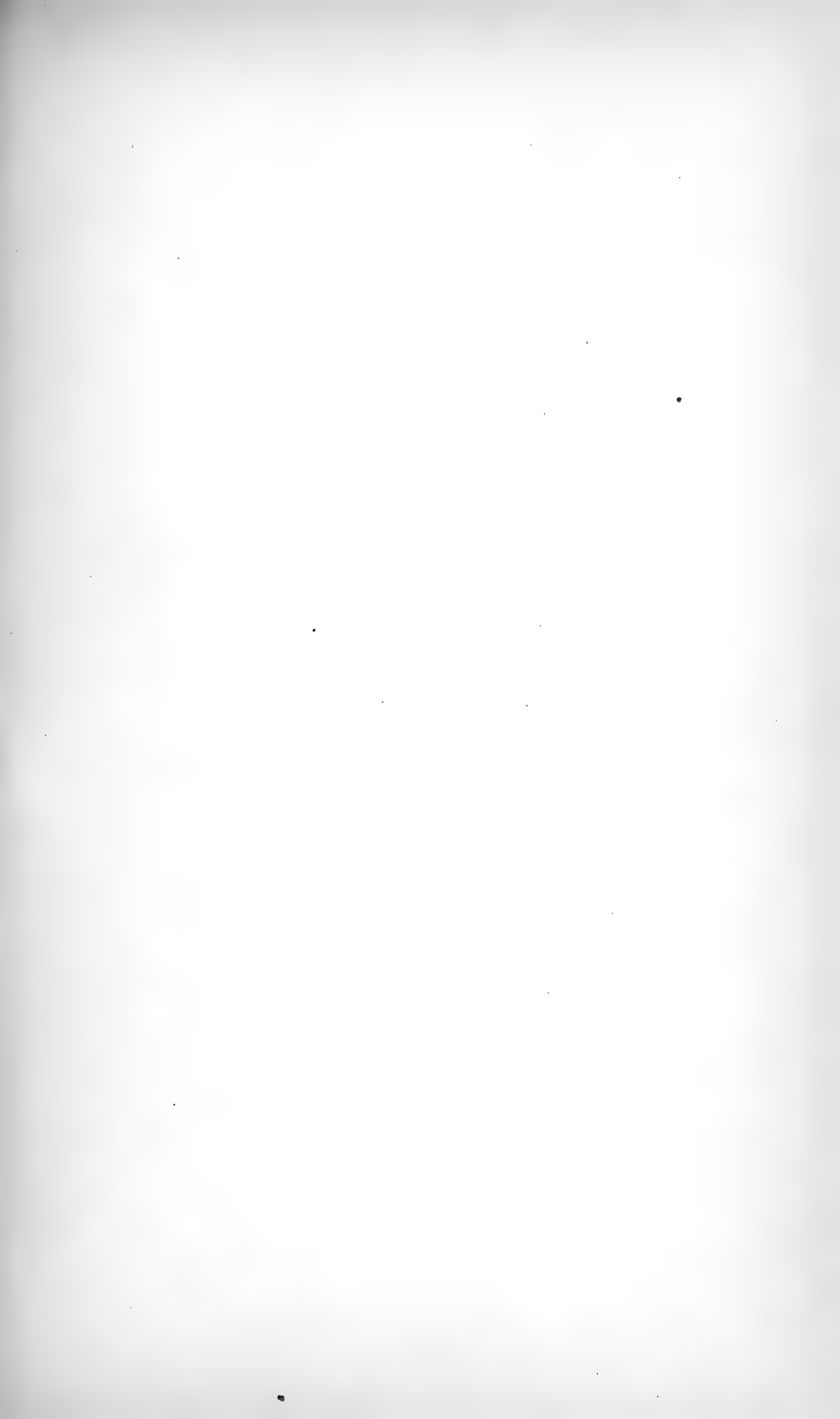
The present species is closer to *Diploexochus* [*Cubaris*] *echinatus* Brandt from Brazil than to any other described species of the genus. Budde-Lund,<sup>1</sup> in his description of that form, mentions twenty spines on the first segment of the thorax, and says there are twelve on each of the following segments. He also describes the terminal abdominal segment as having the apex arcuate emarginate with the external angle a little produced backward. He describes the basal article of the uropoda as acute at the apex with the exterior branch inserted above the incision of the basal article. He also mentions only four spines on each of the third and fourth segments of the abdomen. In that species, the epimera of the third segment of the thorax also are cleft. The epimera of the six posterior segments of the thorax are furnished with a horizontal process on either side.

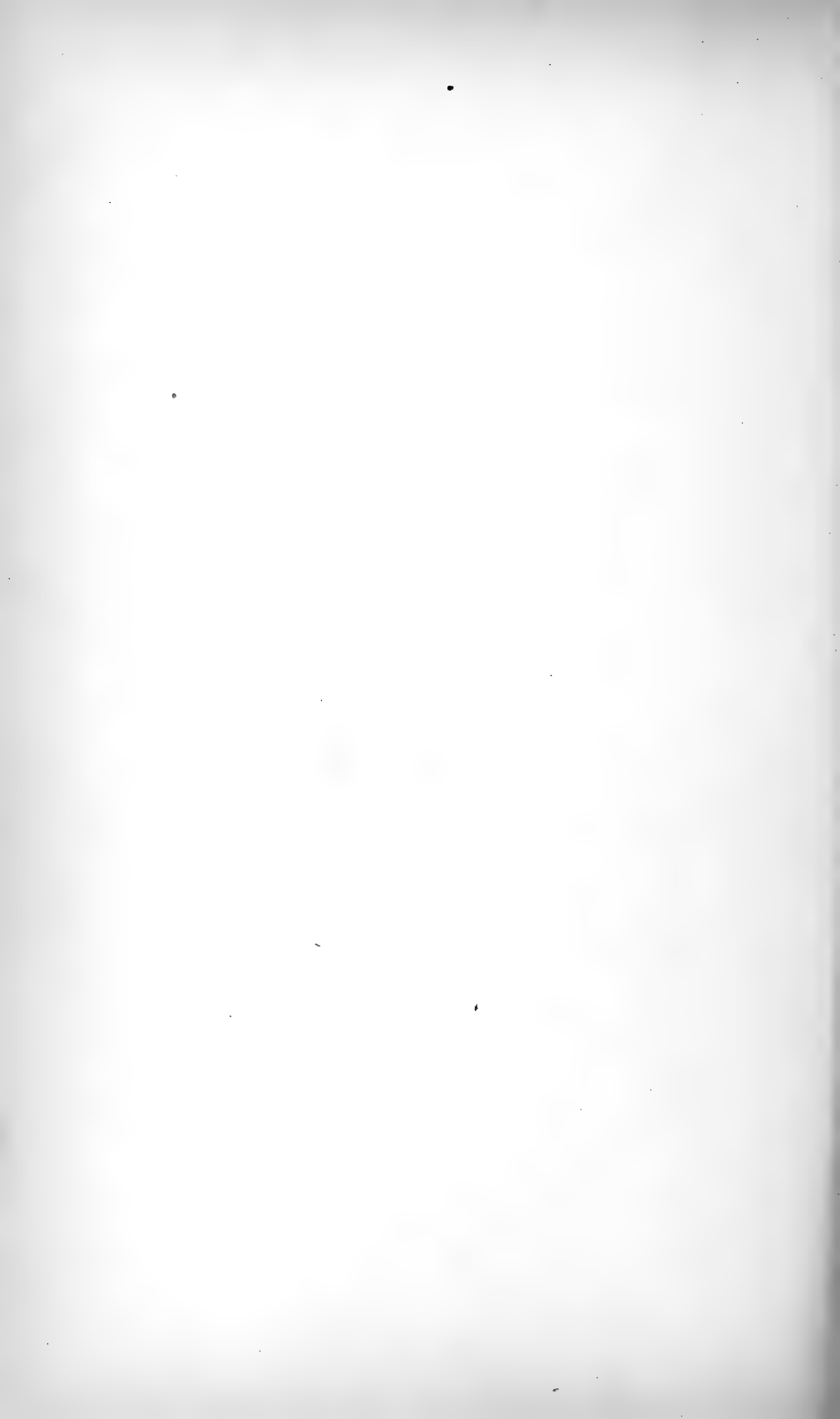
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<sup>1</sup> Crustacea Isopoda Terrestria, 1885, pp. 26-27.













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DESCRIPTIONS OF TWO NEW PARASITIC ISOPODS  
BELONGING TO THE GENERA PALÆGYGE  
AND PROBOPYRUS FROM PANAMA

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, United States National Museum

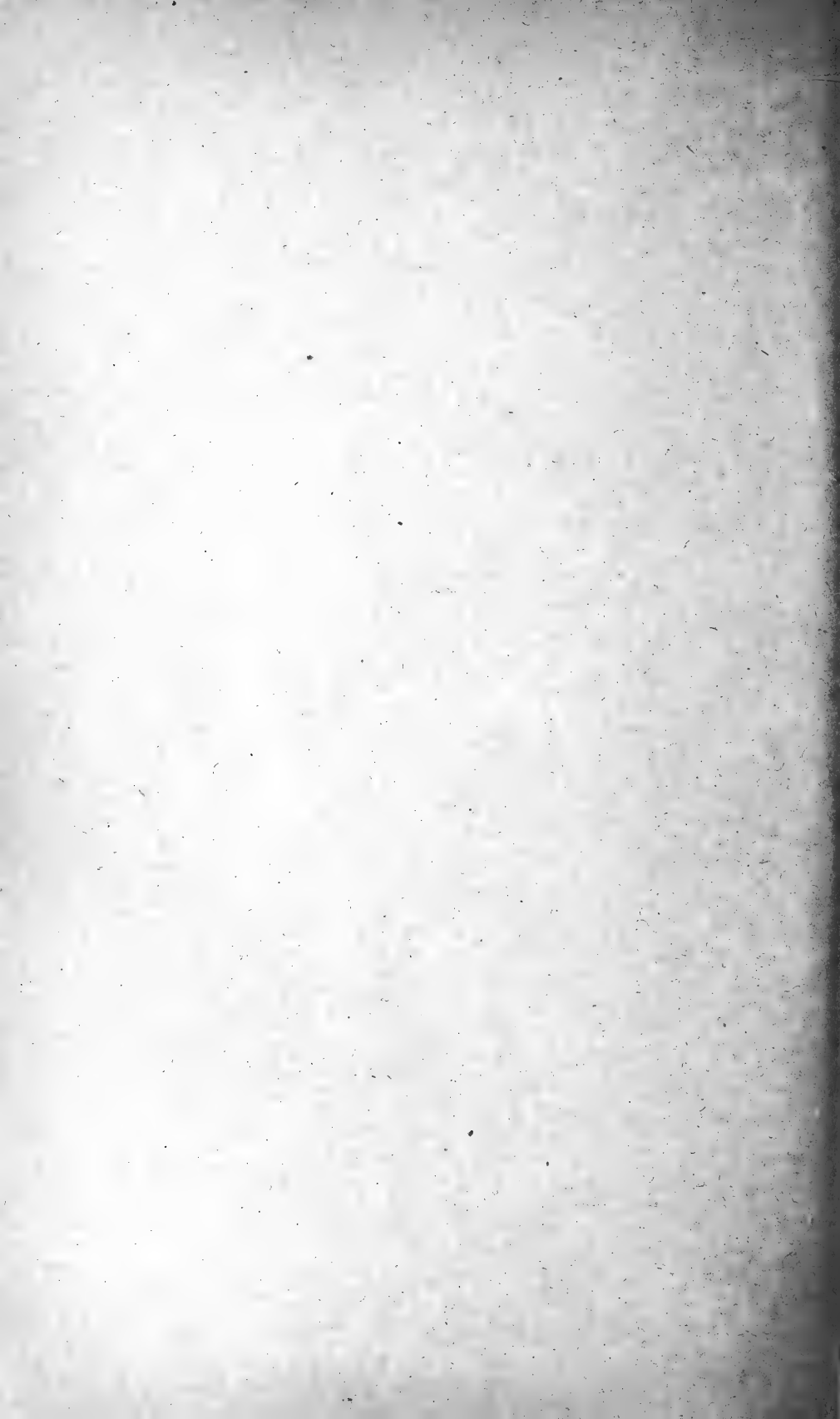
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DESCRIPTIONS OF TWO NEW PARASITIC ISOPODS  
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DESCRIPTIONS OF TWO NEW PARASITIC ISOPODS  
BELONGING TO THE GENERA PALÆGYGE AND PROBOPYRUS FROM PANAMA.

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By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, United States National Museum.*

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A number of specimens representing a new species of *Palægyge* and four specimens representing a new species of *Probopyrus* were collected in 1911 by Dr. S. E. Meek and Mr. S. F. Hildebrand at Panama and the Canal Zone, during a biological survey of the Isthmus of Panama under the auspices of the Smithsonian Institution. The specimens were found parasitic on *Macrobrachium acanthurus* and *M. jamaicense* as well as on the young of the latter or *M. olfersii*.

**PALÆGYGE MEEKI, new species.**

Body of female ovate, somewhat asymmetrical. Length, 9 mm.; width, 7 mm. Color of dorsal surface white, with a few lines of black along the median line and on either side about halfway between the median line and the lateral margins. Incubatory lamellæ on one side covered with black lines; on the other side only the first one is covered, the others having a few black lines at the base.

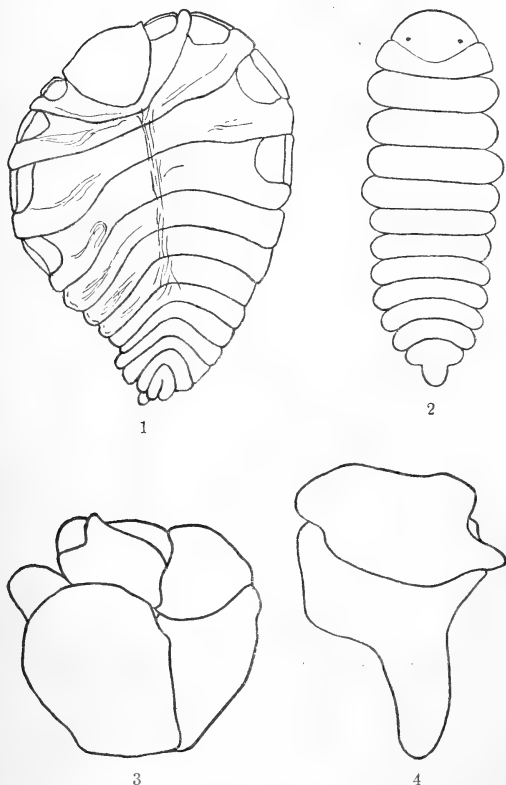
Head large, 2 mm. long and  $2\frac{1}{2}$  mm. wide, deeply set in the thorax; anterior margin widely rounded with the antero-lateral angles produced in small acute lobes. Eyes absent. (See fig. 1.) First two segments of thorax short in the median dorsal line and about equal in length; the following five segments are much longer in the median line and are subequal. Epimera are present on the first four segments, occupying the anterior two-thirds of the lateral margin. Ovarian bosses are also present on these segments and are placed on the anterior part of the sublateral margin. On the last three segments the epimera occupy the entire lateral margin.

All six segments of the abdomen are distinct. The sixth or terminal segment has a posterior incision which extends half the length of the segment, forming two posterior lobes. There are five pairs of double-branched pleopoda, a pair for each of the first five segments, making

twenty lamellæ altogether. The uropoda are rudimentary, in the form of two oval sac-like bodies. There are five pairs of incubatory plates, which do not entirely inclose the marsupial pouch on the ventral side, but come very close together, leaving only a small opening; the first pair has the terminal lobe of the distal segment long and narrow and produced straight backward. (See fig. 4.)

All the legs are prehensile and are furnished with a carina on the basis. (See fig. 3.)

The male is long and narrow, nearly three times as long as wide. The head is large, with the anterior margin widely rounded; the posterior margin is also rounded and deeply set in the first segment of the thorax. (See fig. 2.) The eyes are vanishing. All the segments of the thorax are distinctly separated. The first four segments of the abdomen are also more or less distinct. The fifth and sixth are fused to form a large terminal piece, the lateral incisions alone indicating the two segments. The uropoda are absent. There seem to be no pleopoda.



FIGS. 1-4.—*PALÆGYGE MEEKI*. 1, FEMALE,  $\times 5\frac{1}{2}$ ; 2, MALE,  $\times 23$ ; 3, SIXTH LEG OF FEMALE,  $\times 54\frac{3}{8}$ ; 4, FIRST INCUBATORY PLATE OF FEMALE,  $\times 19\frac{1}{2}$ .

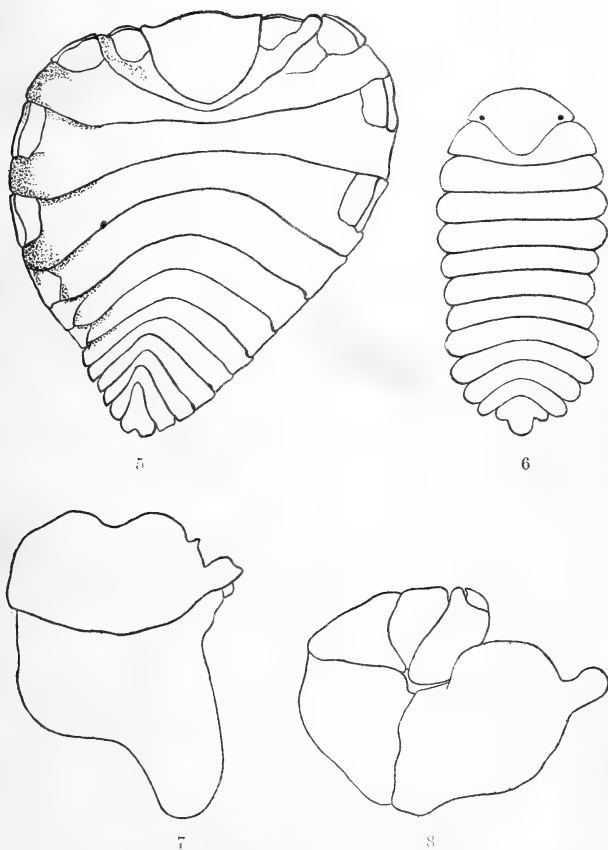
This species is parasitic on *Macrobrachium* young (either *jamaicense* or *olfersii*) being found in the branchial cavity. It was collected by Doctor Meek and Mr. Hildebrand in a small creek, Atlantic slope, Culebra, Canal Zone; in the upper Trinidad River, Panama; in the Rio Masimbar, Empire, Canal Zone; in the Rio Frijoles, Frijoles, Canal Zone; in the Agua Clara Creek, Panama; in the Gatun River, above Mitchelville; and in the upper Trinidad River, Panama, on *Macrobrachium jamaicense* (Herbst).

The type from the first-named locality is in the United States National Museum, Cat. No. 43502.

**PROBOPYRUS PANAMENSIS**, new species.

Body of female ovate, somewhat asymmetrical, 10 mm. wide, 12 mm. long. Color white with a few markings of reddish-brown on one side of the thorax.

Head a little wider than long, 4 mm.:3 mm. Anterior margin widely rounded; antero-lateral angles small, acute. Head deeply immersed in the thorax. Eyes absent. (See fig. 5.)



FIGS. 5-8.—**PROBOPYRUS PANAMENSIS**. 5, FEMALE,  $\times 4\frac{1}{2}$ ; 6, MALE,  $\times 23$ ; 7, FIRST INCUBATORY PLATE OF FEMALE,  $\times 14\frac{1}{2}$ ; 8, SIXTH LEG OF FEMALE,  $\times 23$ .

First segment of thorax very short in the middle of the dorsal region; second segment twice as long as the first in the middle of the dorsal region; third segment as long as the first and second segments taken together; last four segments subequal. Ovarian bosses are present on the first four thoracic segments; they occupy two-thirds of the sublateral margin of the first segment, one-half that of the second and third segments, and a little more than half that of the fourth segment. Lateral to the ovarian bosses are the epimera,

pleon segments of Probopyrus panamensis.

which extend the length of the ovarian bosses. On the last three segments the epimera occupy the entire lateral margin.

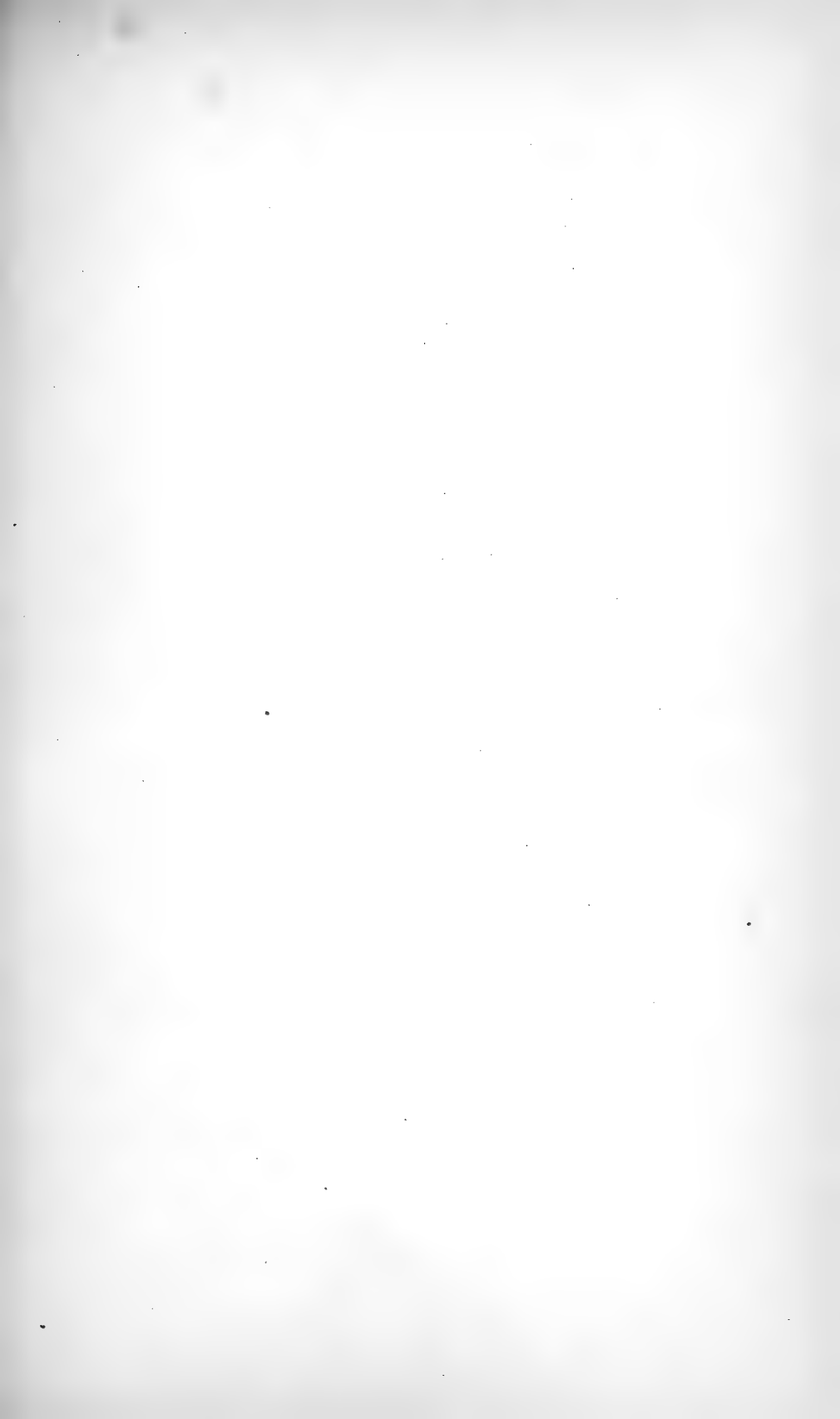
All six segments of the abdomen are distinct. The sixth or terminal segment has a small rounded notch in the middle of the posterior extremity. There are five pairs of double-branched pleopoda, a pair for each of the first five segments. The uropoda are absent. There are five pairs of incubatory plates; the first pair has the terminal extremity of the distal segment produced in a short, broad, rounded lobe. (See fig. 7.) All the incubatory lamellæ are marked with reddish-brown, those on one side being more completely covered than those on the other side. The legs are all prehensile, with a high carina on the basis. (See fig. 8.)

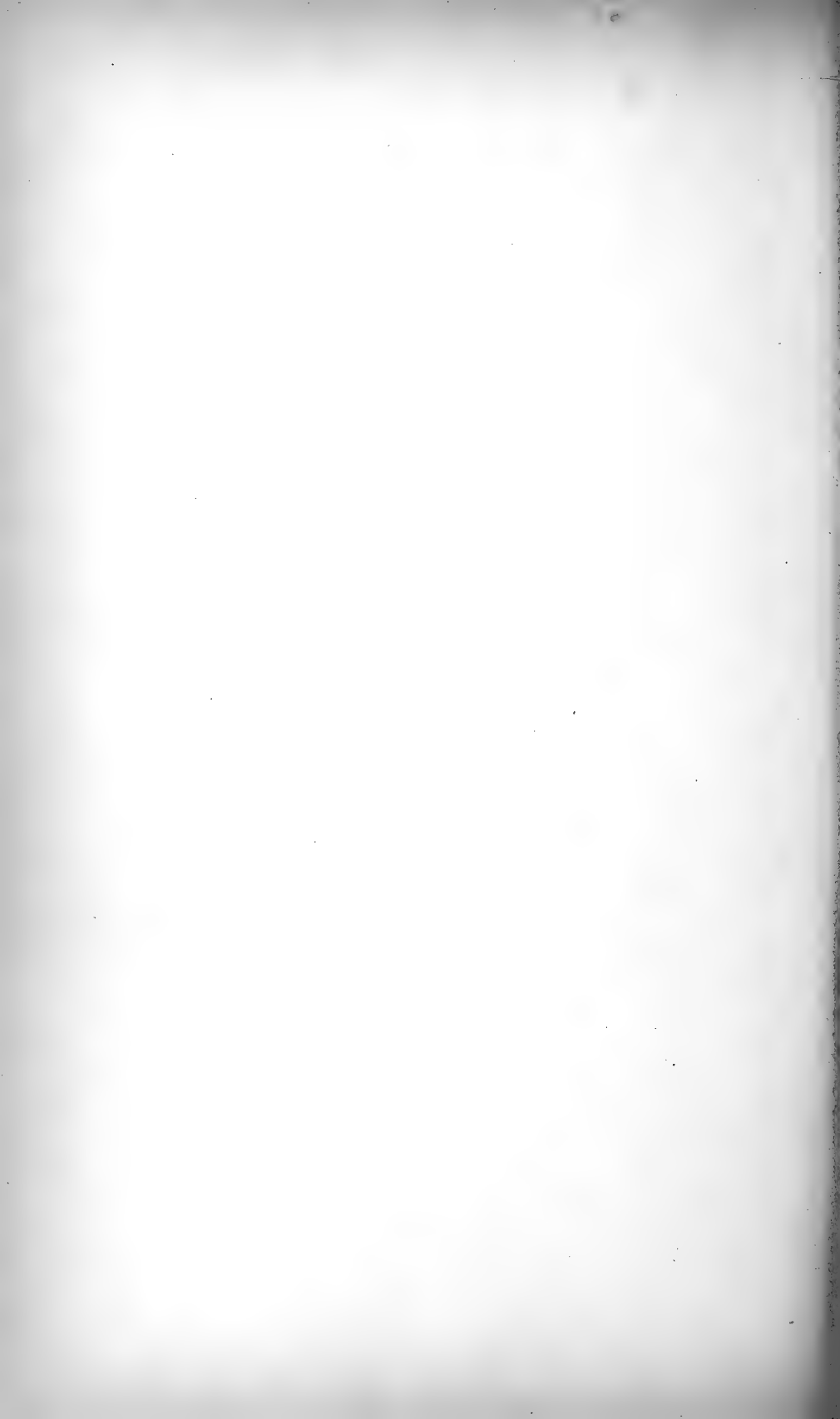
The male is rather short and thickset, being twice as long as wide. The head is small, with the anterior margin widely rounded; its posterior margin is produced backward in a peculiar way, being deeply set in the first thoracic segment. (See fig. 6.) Eyes are present, situated in the post-lateral angles. All the segments of the thorax are distinct. The first four segments of the abdomen are distinct at the sides, but more or less confluent in the middle of the dorsal surface; the last two segments are fused in a single terminal piece, the incisions at the sides indicating the two segments. There are three pairs of rudimentary pleopoda, but no uropoda.

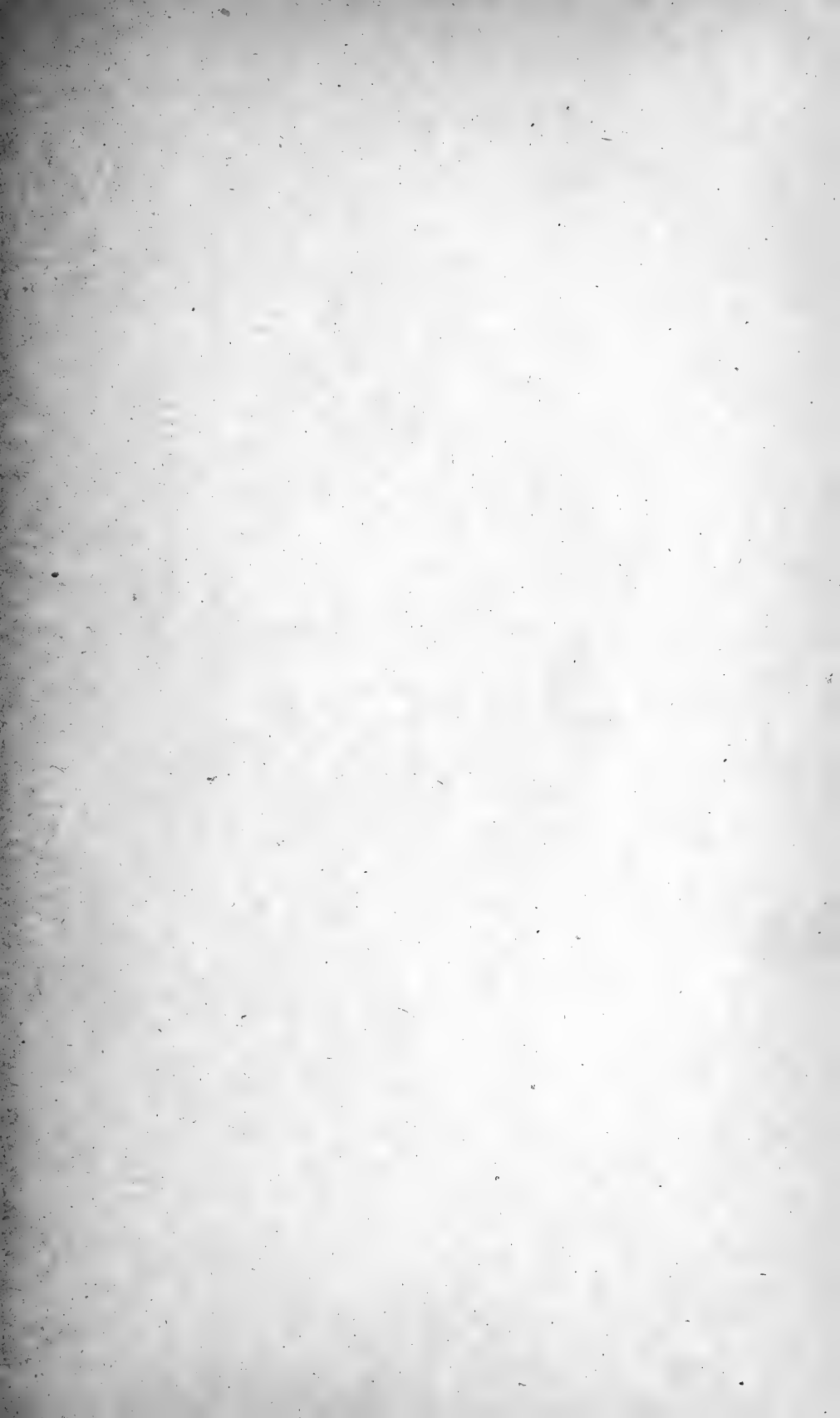
Two specimens of this species were collected by Doctor Meek and Mr. Hildebrand in a small creek at Pariso, Canal Zone. They were parasitic on *Macrobranchium acanthurus* (Wiegmann), being found in the branchial cavity.

The type is Cat. No. 43503, U.S.N.M.

This species differs from all the described species of the genus from the Atlantic Coast of North America in the presence of a notch in the terminal abdominal segment of the female. *Probopyrus floridensis*, however, has a minute excavation. The first incubatory plate of the female is different in the two species, as well as the color markings; the head, abdomen, and proportions of the male are also different. The shape of the head and of the abdomen of the male is different from any of the described species.











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DESCRIPTION OF A NEW SPECIES OF ISOPOD  
BELONGING TO THE GENUS APSEUDES  
FROM ECUADOR

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, United States National Museum

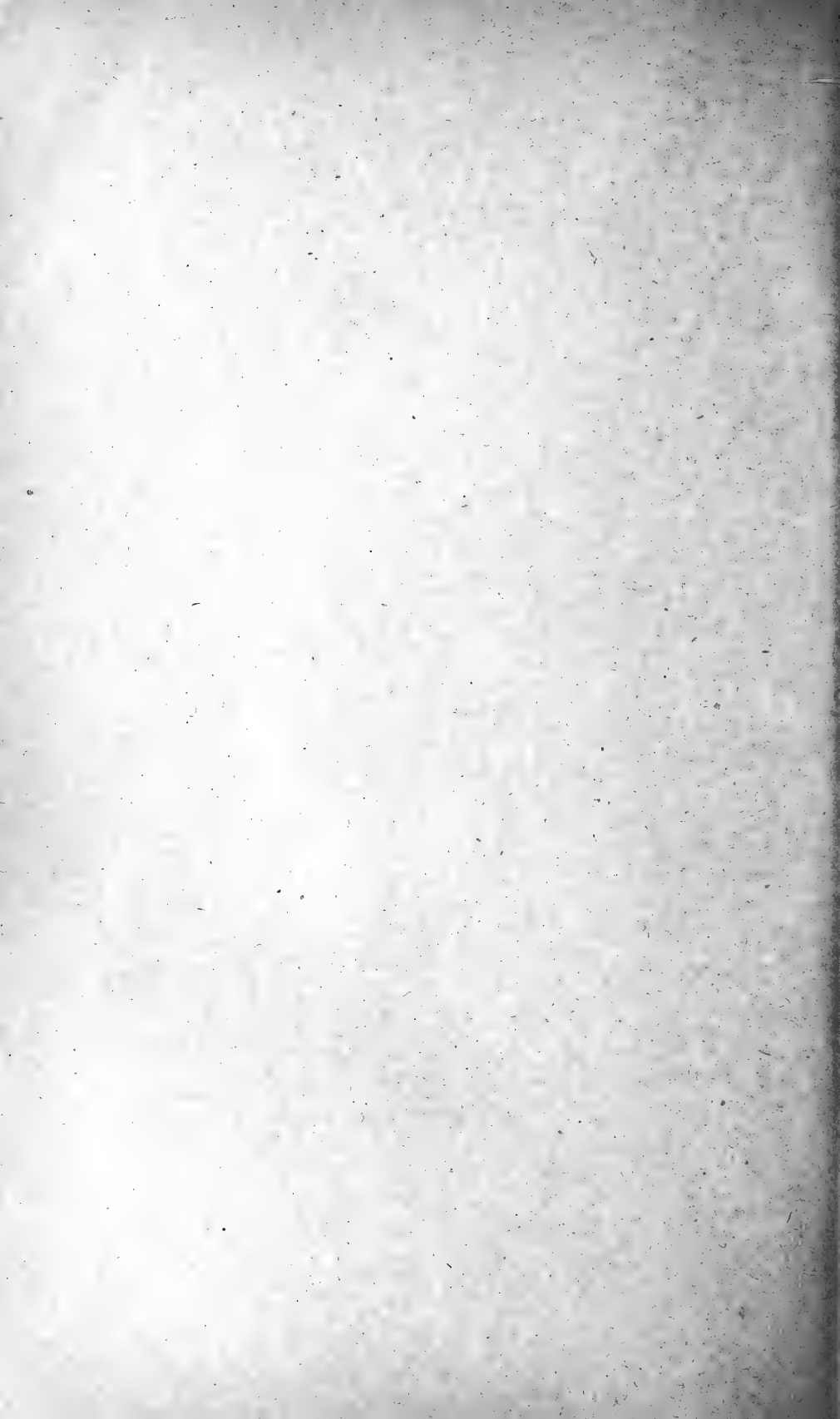
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# DESCRIPTION OF A NEW SPECIES OF ISOPOD BELONGING TO THE GENUS APSEUDES FROM ECUADOR.

By HARRIET RICHARDSON,

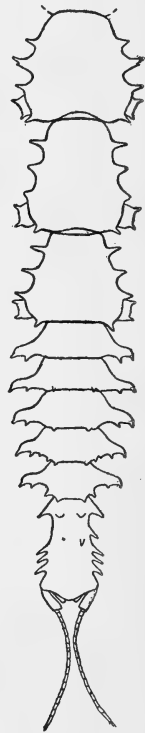
*Collaborator, Division of Marine Invertebrates, United States National Museum.*

A single imperfect specimen representing a new species of *Apseudes* was collected off Cape San Lorenzo, Ecuador, by the U. S. Bureau of Fisheries steamer *Albatross* in 1888. Although the anterior half of the specimen is missing, the part obtained is in such good condition and so entirely distinct from any known species that it seems worth while to describe it.

## APSEUDES MERIDIONALIS, new species.

The single specimen is incomplete, consisting of only the posterior half of the body—or the last three segments of the thorax and the abdomen. It measures 16 mm. in length and 3 in width. Each of the thoracic segments is provided with four spines on either side, the two anterior being larger and longer than the two posterior. Between the two posterior spines is situated the epimeron, which is provided with two spines, one at the antero-lateral angle and the other at the post-lateral angle. The fifth and sixth thoracic segments (fourth and fifth free segments) measure each 3 mm.; the seventh segment (sixth free segment) measures  $2\frac{1}{2}$  mm. in length.

The five anterior segments of the abdomen are subequal and are each 1 mm. long; the lateral parts are produced on either side in a process which is provided with two small spines, one at the post-lateral angle and the other halfway between that and the posterior margin of the segment; the fourth and fifth segments have additional smaller spines on the posterior margin of these lateral processes. On the posterior margin of the second, third, fourth, and fifth segments are two small spines, one on either side of the median line. The sixth or terminal segment is 4 mm. long; at the place of attachment of the uropods it is  $1\frac{1}{2}$  mm. wide; at



APSEUDES MERIDIONALIS. POSTERIOR HALF OF BODY.  $\times 4\frac{1}{2}$ .

its anterior extremity it is provided with a strong spine, and just behind the middle, with three long spines on either side of the lateral margin; on one side there is a fourth spine in front of the three lateral spines. On the dorsal surface just within the anterior lateral spines are two small spines, one on either side of the median line, and behind these at about the middle of the segment are two other small spines, one being larger and more conspicuous than the other. The posterior end of the segment is slightly triangular. The basal article of the uropoda is about twice as long as wide; the outer branch is composed of 17 articles; the inner branch is lost. On the ventral side of the sixth segment of the thorax (fifth free segment) there is a long median spine and a short one is present on each of the first five abdominal segments.

Half of one specimen was taken by the U. S. Bureau of Fisheries steamer *Albatross* March 2, 1888, at station 2792, off Cape San Lorenzo, Ecuador, in lat.  $00^{\circ} 37' 00''$  S.; long.  $81^{\circ} 00' 00''$  W., at a depth of 401 fathoms, in green mud.

The type is Cat. No. 43504, U.S.N.M.

This is the first species of *Apseudes* recorded from South America. It is an unusually large member of the genus. The other 28 known species are as follows:

*talpa* (Montagu).

*latreilli* (M. Edwards).

*spinosus* M. Sars.

*cæcus* Willemoes-Suhm.

*australis* Haswell.

*obtusifrons* Haswell.

*latus* Chilton.

*timaruvius* Chilton.

*tenuimanus* G. O. Sars.

*echinatus* G. O. Sars.

*robustus* G. O. Sars.

*spectabilis* Studer.

*antarcticus* Beddard.

*uncidigitatus* Norman and Stebbing.

*obtusifrons*<sup>1</sup> Norman and Stebbing.

*simplicirostris* Norman and Stebbing.

*grossimanus* Norman.

*gracilis* Norman and Stebbing.

*sculptus* Pfeffer.

*intermedius* Hansen.

*hibernicus* Walker.

*multicarinatus* Whitelegge.

*espinosus* Moore.

*triangulatus* Richardson.

*propinquus* Richardson.

*seurati* Nobili.

*rikiteanus* Nobili.

*armatus* Richardson.

The species described by Bonnier<sup>2</sup> as *Apseudes koehleri* is probably a synonym of *Apseudes spinosus*, as Norman has previously stated. Norman has also referred *A. acutifrons* Sars and *A. hastifrons* Norman and Stebbing to a new genus *Apseudopsis*.

<sup>1</sup> Since the specific name of this species was used by Haswell five years earlier, I therefore name this species *Apseudes retusifrons*.

<sup>2</sup> Ann. Univ. Lyon, vol. 26, 1896, p. 562.

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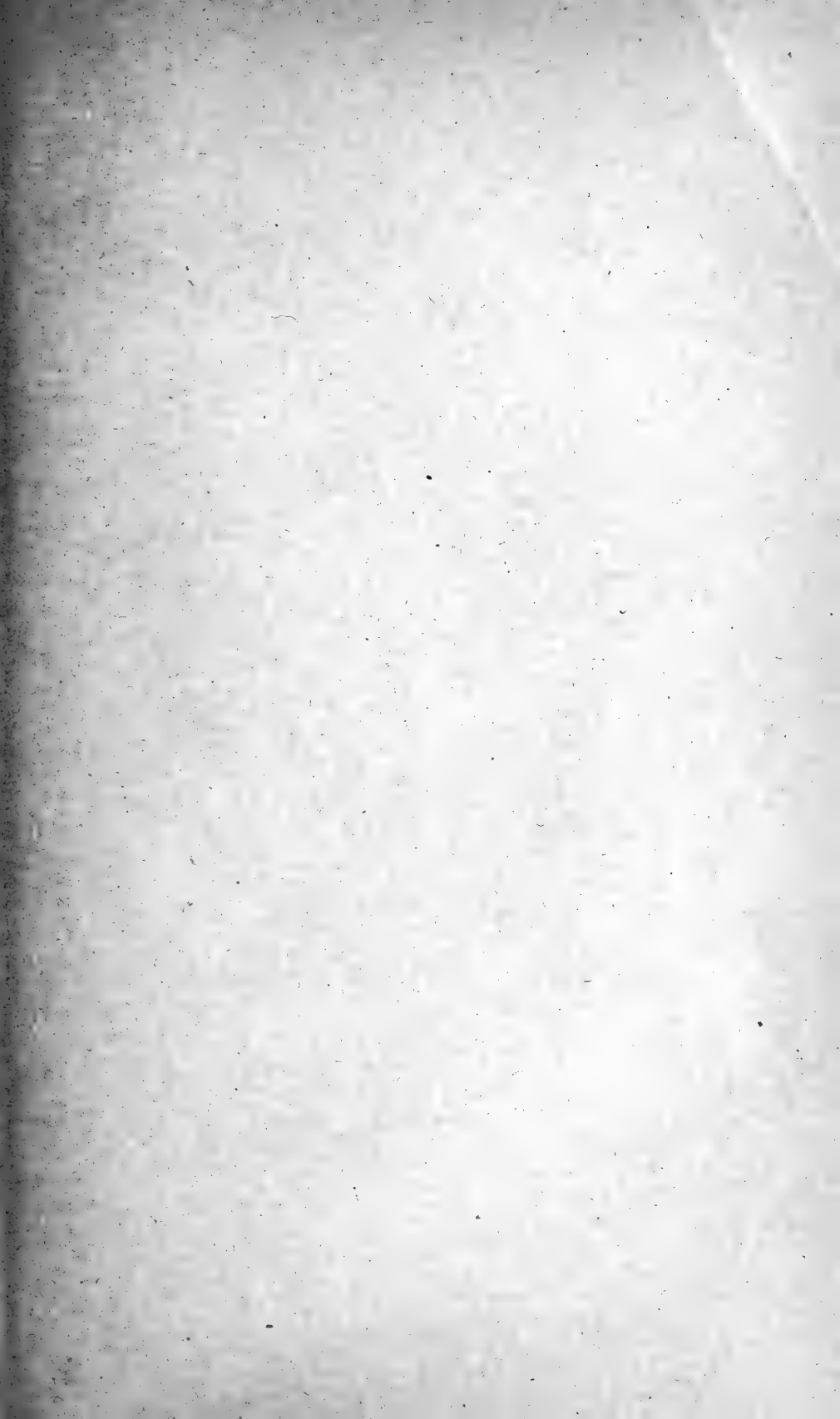
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DESCRIPTIONS OF TWO NEW ISOPODS, AN APSEUDES  
AND A MUNNOPSIS, BOTH FROM THE  
GALAPAGOS ISLANDS

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, United States National Museum

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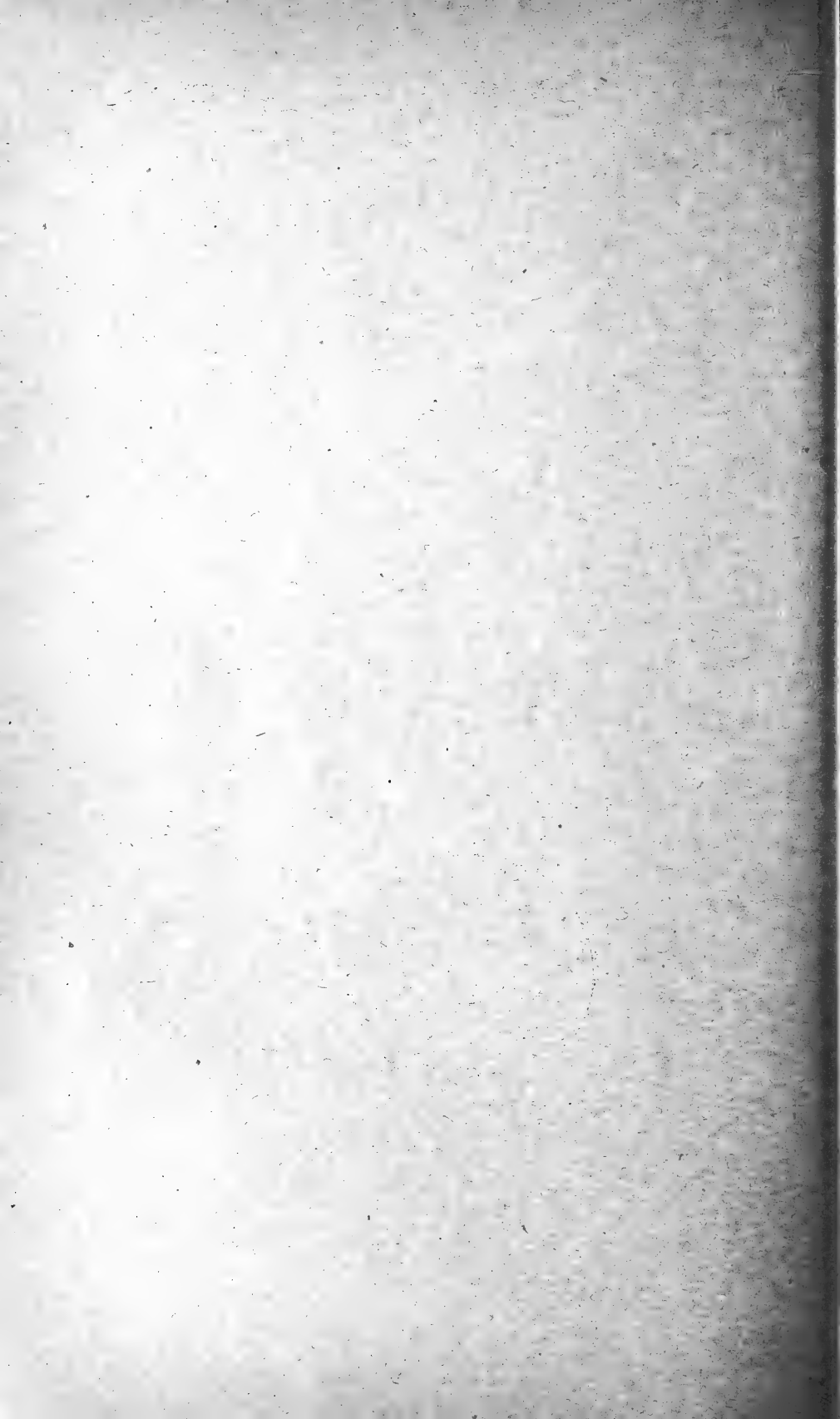
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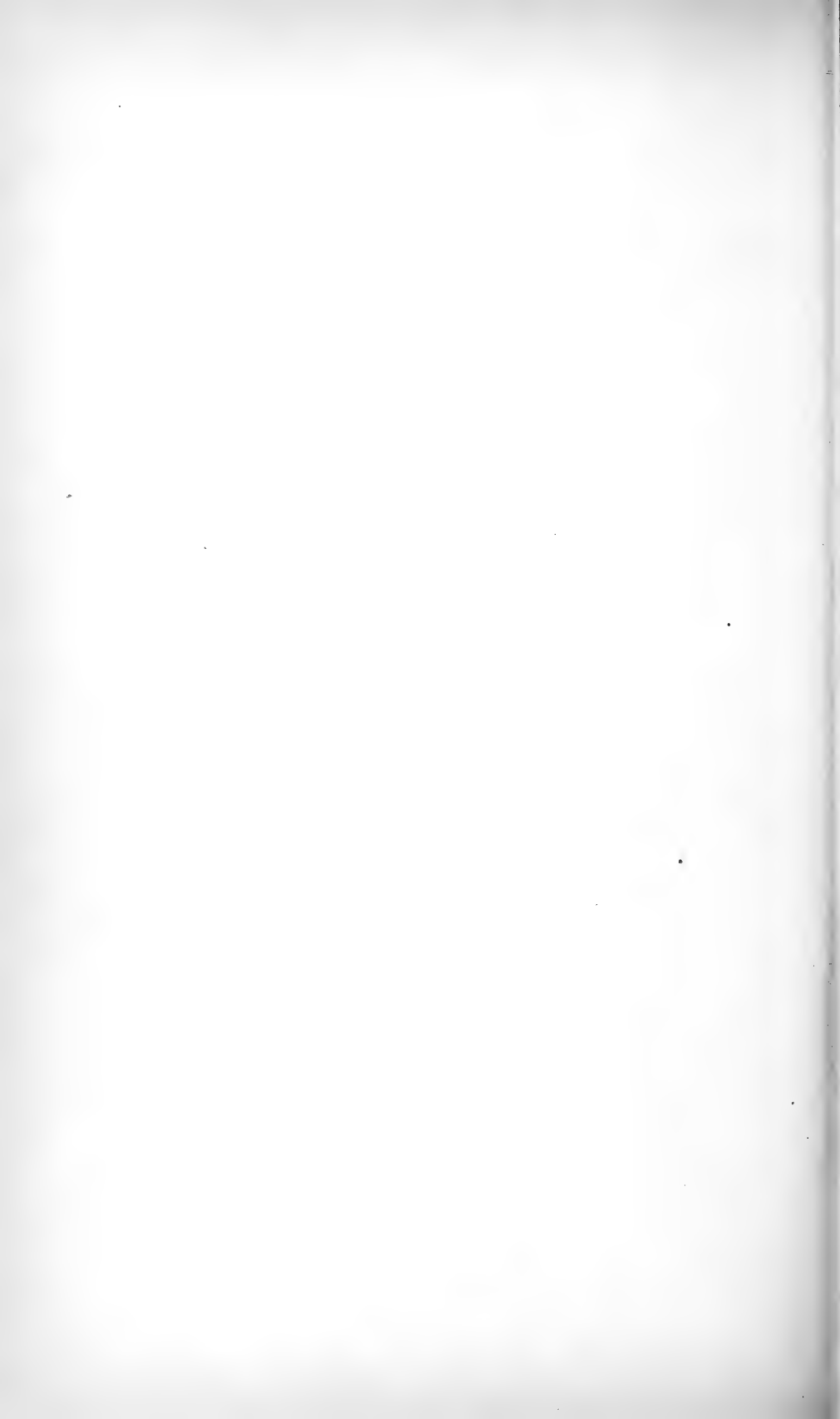
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# DESCRIPTIONS OF TWO NEW ISOPODS, AN APSEUDES AND A MUNNOPSIS, BOTH FROM THE GALAPAGOS ISLANDS.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, United States National Museum.*

In 1888, during the cruise of the U. S. Bureau of Fisheries steamer *Albatross* around South America, two specimens, representing two new species of isopods belonging to different genera, were collected off Chatham Island, Galapagos Islands, at the same station and in a great depth, 812 fathoms. These species are described below. From the same locality and depth a specimen of *Arcturus* was obtained, which has been referred to *A. abyssicola* Beddard.

## APSEUDES GALAPAGENSIS, new species.

Body narrow, elongate. Color white.

Head narrower anteriorly than posteriorly, with the front produced in the middle in a long slender acute rostrum, which has at the base on either side a rounded bulblike expansion; the rostrum extends forward to the middle of the basal article of the first antennæ. The shape of the rostrum is similar to that in *Apseudes spinosus* (M. Sars). On either side of the rostrum, the ocular process is produced in a long, acute spine, equal in length to the rostral spine. There are no eyes. The basal article of the first antennæ is long and narrow and extends forward; it is unarmed; the second and third articles are short and subequal and together are about half as long as the basal article; the flagellum is composed of 14 articles, the secondary filament of 6 articles. The second antennæ are slender and frail; the first article is short, about as broad as long; the second, fourth and fifth articles are subequal and each is about three times as long as the first article; the third is minute; the flagellum is composed of 7 articles. A scale is articulated to the second article. (See fig. 1.)

The first segment of the thorax is united with the head to form a carapace, as is usual in this genus. The second segment (first free segment) is produced on either side of the epimeron in a small spine, the post-lateral angle being rounded. The epimeron is produced in

a long, acute process, extending forward on either side of the head. The third segment (second free segment) has three small spines on the lateral margin anterior to the epimeron, which is small, and one spine posterior to the epimeron. The fourth segment (third free segment) has three spines on the lateral margin anterior to the epimeron, the first being small, the two following ones long and acute, and two small spines posterior to the epimeron. The fifth segment (fourth free segment) as well as the sixth segment (fifth free segment) have each three spines on the lateral margin on either side anterior to the epimeron, the first one being small and the two following ones long and acute. The seventh or last thoracic segment (sixth free segment) has two long, acute spines anterior to the epimeron. The fifth and sixth segments (fourth and fifth free segments) are the longest and are subequal.

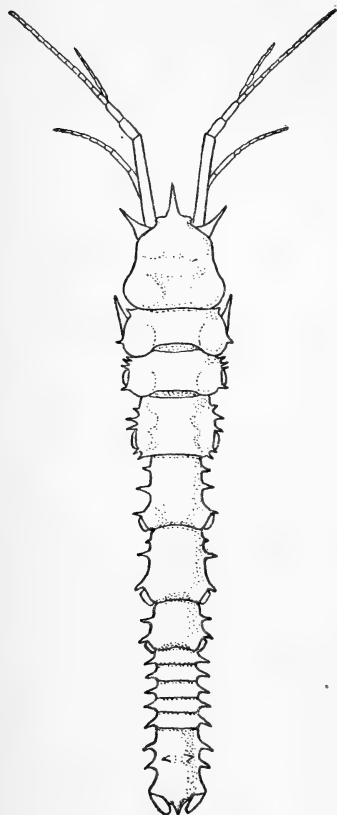


FIG. 1.—*APSEUDES GALAPAGENSIS*.

The first five segments of the abdomen are short and subequal and each has the lateral margin produced on either side in a long, acute process. The sixth or terminal segment is about as long as the four preceding segments taken together; it terminates in an acute point which is upturned. About the middle of the dorsal surface are two spines, one on either side of the median line. The lateral margin is produced on either side in two long, acute processes, one a little below the middle of the segment and the other a little above. The peduncle of the uropods is elongate; both branches are missing. On the ventral side of the body is a long, median spine on each of the thoracic and the first five abdominal segments.

The first pair of legs are chelate; they are large and strong and have the propodus furnished with a triangular process or tooth a short distance from the articulation of the dactylus with the propodus. The carpus also has a small triangular process near the proximal end. (See fig 2.) The second pair of legs are fossorial and are a little longer and stouter than any of the following, which are similar in structure



FIG. 2.—*APSEUDES GALAPAGENSIS*.  
FIRST LEG.

and size. The propodus of the fossorial legs is furnished with four spines on the inner margin.

There are five pairs of double-branched pleopods, which are small and slender and rather difficult to see.

Only one specimen was collected by the U. S. Bureau of Fisheries steamer *Albatross* April 4, 1888, at station 2807, off Chatham Island, Galapagos Islands, at a depth of 812 fathoms in globigerina ooze, coral, and mud.

*Type-specimen*.—Cat. No. 43694, U.S.N.M.

MUNNOPSIS LONGIREMIS, new species.

Body oblong-ovate. Anterior division wider than posterior division.

Head wider than long,  $3\frac{1}{2}$  mm. wide,  $1\frac{1}{2}$  mm. long (including the rostrum). The front is produced between the basal articles of the antennæ, the anterior margin of the rostrum being straight. The first pair of antennæ have the basal article large and dilated; the second is small and short; the two following are subequal and both together about equal in length to the second; the flagellum is very long, extending to the posterior margin of the fourth thoracic segment. The second antennæ are broken at the end of the third article and the terminal parts lost. The eyes are absent. The mandibles have a 3-jointed palp, the middle article being about three times as long as either of the other two. (See fig. 3.)

The first segment of the thorax is shorter in the middle of the dorsal region than either of the two following, which are subequal. The first segment is 0.3 mm. long, the second and third each 0.5 mm. The fourth segment is short in the middle of the dorsal region (about 0.5 mm.), and is produced backward at the sides. The fifth segment is 0.5 mm. long in the middle of the dorsal region. The sixth and seventh segments are longer in the middle of the dorsal region than any of the preceding, the sixth being twice as long as the fifth (1 mm.) and the seventh a little longer than the sixth. The lateral parts of the last three segments are produced backward. All the segments are provided with epimera.

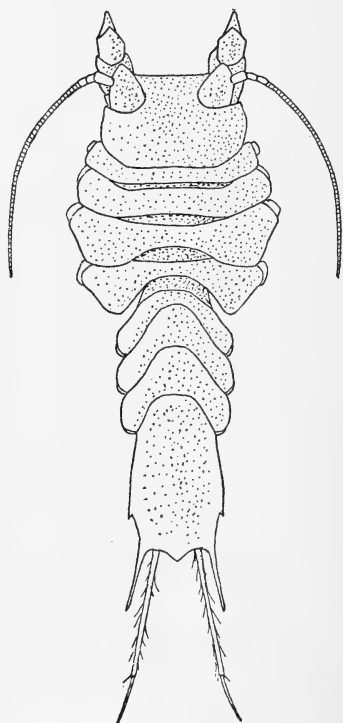


FIG. 3.—MUNNOPSIS LONGIREMIS.

The abdomen consists of a single large segment, which measures 4.5 mm. in length. At each post-lateral angle is a long spine, 1.5 mm. in length, produced straight backward and about two-thirds the length of the lateral margin is a small spine on either side. The posterior margin is produced in the middle in a small triangular process. The uropoda consist of a long peduncle, 3 mm. in length, or twice as long as the post-lateral spines, and a single branch which is 1.5 mm. in length.

All the legs are broken at the basis with the exception of one leg of the first pair, and this is the only one preserved (see fig. 4); it is prehensile, with 13 spines on the propodus and 5 on the merus; there is also one long spine on the carpus about the middle of the inner margin.

A single imperfect specimen, the body being in two parts, was found by the U. S. Bureau of Fisheries steamer *Albatross* at station 2807, off Chatham Island, Galapagos Islands, at a depth of 812 fathoms in globigerina ooze, coral, and mud.



FIG. 4.—*MUNNOPSIS LONGIREMIS*.  
FIRST LEG.  $\times 104$ .

*Type-specimen*.—Cat. No. 43695, U.S.N.M.

This species is very close to *Munnopsis latifrons* Beddard from off Ino Sima Island, Japan. It differs, however, from that species as described and figured by Beddard in not having the posterior margin of the terminal segment of the body truncate, but produced in a small triangular process, in having the post-lateral spines of this segment much longer than in that species and in having a greater number of spines on the propodus of the first pair of legs. The spine on the carpus is also situated halfway between the posterior and the anterior end of the article, while in *M. latifrons* it is situated closer to the anterior end.

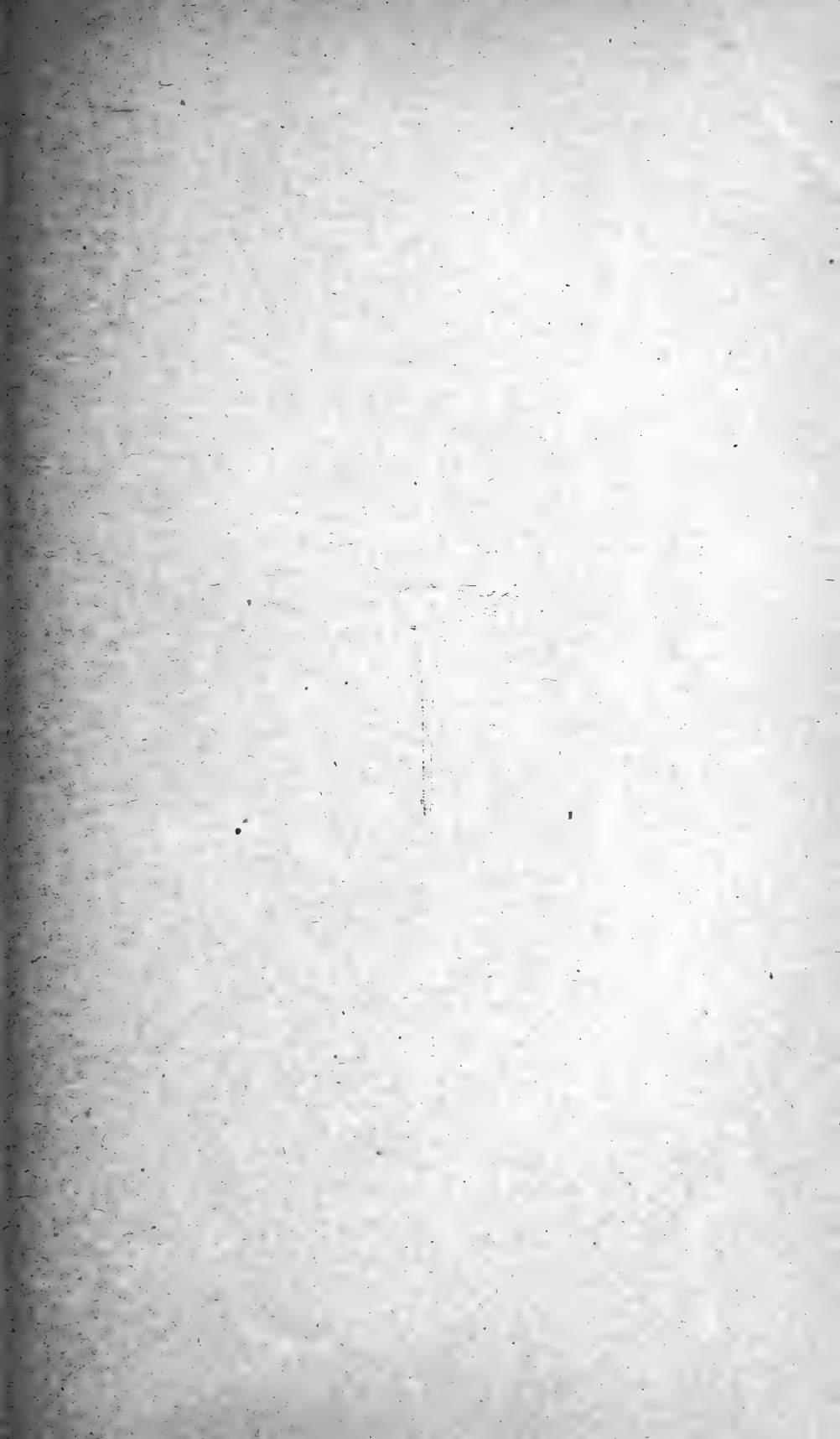
The specimens referred by me to *M. latifrons* in 1909 differ from that species in having the posterior margin of the abdomen produced in a triangular process between the post-lateral spines, which are more divergent than in Beddard's specimens. There are also two smaller spines on the lateral margin on either side not seen in Beddard's specimens. These specimens may have to be referred to a new species.

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DESCRIPTIONS OF A NEW GENUS OF ISOPOD  
CRUSTACEANS, AND OF TWO NEW SPECIES  
FROM SOUTH AMERICA

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, United States National Museum

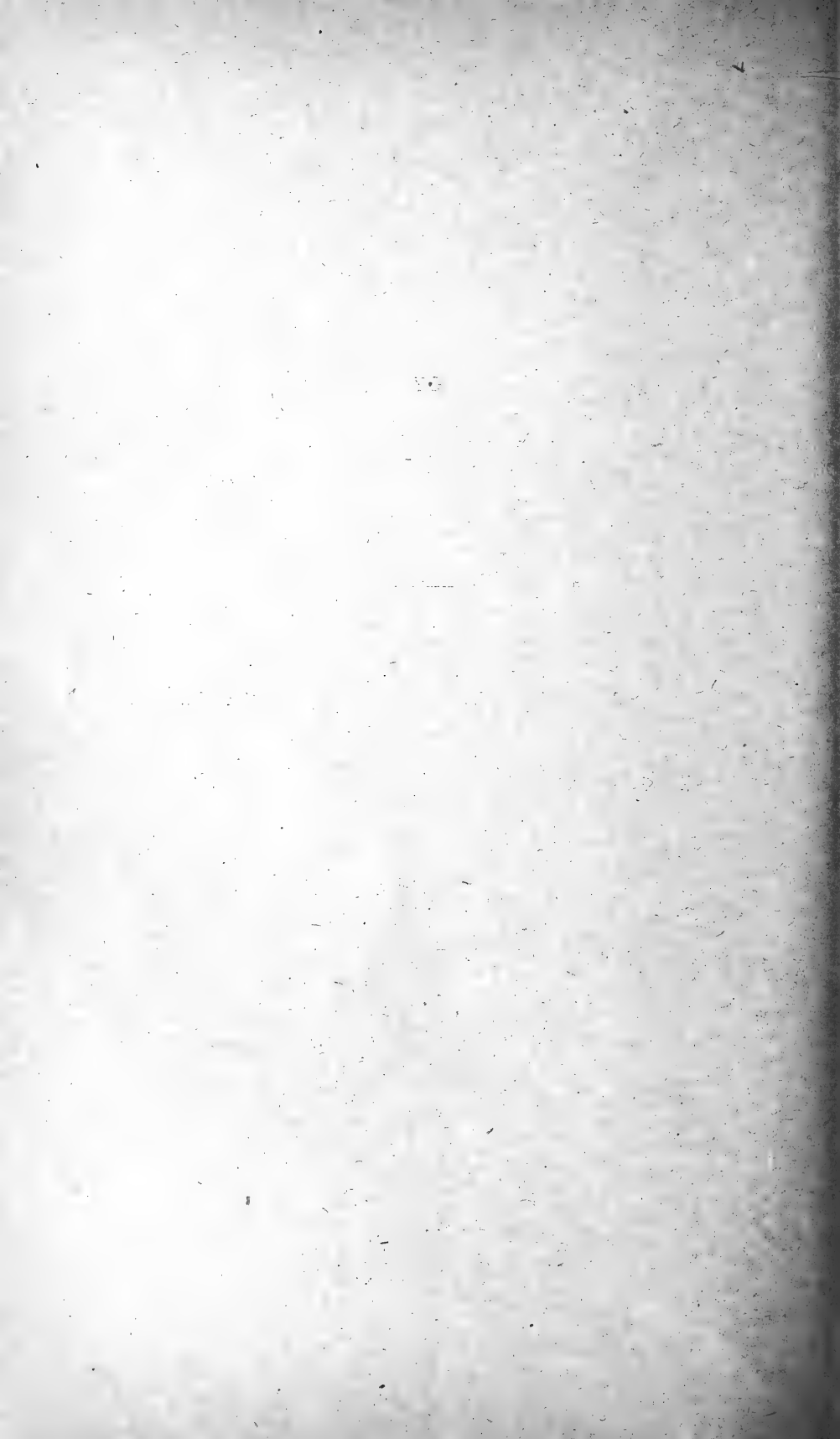
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# DESCRIPTIONS OF A NEW GENUS OF ISOPOD CRUSTACEANS, AND OF TWO NEW SPECIES FROM SOUTH AMERICA.

By HARRIET RICHARDSON,

Collaborator, Division of Marine Invertebrates, United States National Museum.

Six species heretofore referred to the genus *Cirolana* are herein transferred to a new genus, of which *Cirolana orientalis* Dana is designated as the type. Two new species of the genus are also described, one collected on the east coast and the other on the west coast of South America. Only one of the six known species is from South America, the others being from North America and the Orient.

## EXCIROLANA, new genus.

Head with the front produced in the middle in a process which separates the basal articles of the antennæ and extends anteriorly, becoming dilated at its extremity and confluent with the frontal lamina.

All the segments of the abdomen with the sides free, those of the fifth not covered by the lateral angles of the preceding segment.

Uropods and terminal segment of abdomen furnished with long plumose hairs, the outer margin of the external branch being always naked.

Pleopods with both branches long, slender, and tapering.

Mouth parts as in the genus *Cirolana*.

*Type of the genus.*—*Cirolana orientalis* Dana, from the Sulu (Jolo) Sea.

The other species referred to this genus are:

*Exciorolana armata* (Dana), from Rio Janeiro, Brazil;

*Exciorolana mayana* (Ives), from Yucatan;

*Exciorolana linguifrons* (Richardson), from Monterey Bay, California;

*Exciorolana chiltoni* (Richardson), from San Francisco, California;

*Exciorolana japonica* (Thielemann), from Japan;

and the two new species described herein.

*EXCIROLANA CHILENSIS*, new species.

Body oblong-ovate and very convex. Color, in alcohol, yellow, marked with scattered arborescent black markings.

Head large, wider than long, with the front excavate between the antero-lateral angles and the median process for the reception of the basal articles of the first antennæ. Antero-lateral angles obliquely truncate. The anterior margin is produced in the middle in a long, narrow process between the basal articles of the first antennæ and becomes dilated at its extremity, which is continuous with the frontal lamina. The eyes are large and subquadrate and extend half the length of the lateral margin. The peduncle of the first antennæ is composed of three articles, the first two of which are subequal and dilated,

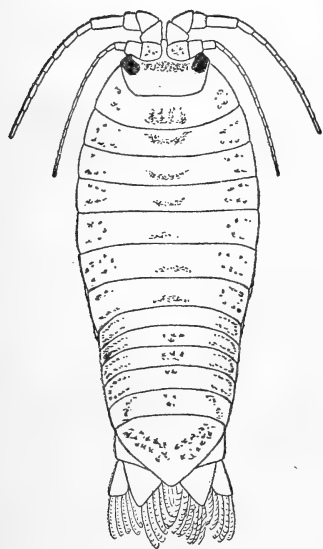


FIG. 1.—*EXCIROLANA CHILENSIS* X6.

being about as wide as long; the third article is shorter and narrower than either of the other two; the flagellum is composed of 15 articles and extends to the posterior margin of the third thoracic segment. The second antennæ have a peduncle composed of 5 articles, the first two of which are directed forward, the basal one being concealed in a dorsal view by the first antennæ; the first 4 articles are short, the fifth being much longer than any of the others; the flagellum is broken off at the ninth joint.

The segments of the thorax are subequal. All, with the exception of the first, are provided with wide, subquadrate epimera. The greatest width of the thorax is 4 mm.

The first 5 segments of the abdomen are short and subequal, all visible in a dorsal view, the fifth being free at the sides, which are not covered by the fourth segment. The sixth or terminal segment is wider than long,  $2\frac{1}{2}$  mm.:  $1\frac{1}{2}$  mm., and is triangularly produced at its posterior extremity. The length of the entire abdomen is 4 mm. The peduncle of the uropoda is produced at its inner extremity; the inner branch is wide and has the posterior extremity obliquely truncate; the outer branch is about half as wide as the inner branch and also has the posterior extremity obliquely truncate, but less so than the inner branch. The posterior margin of the terminal abdominal segment as well as the posterior margin of the uropoda is fringed with long plumose hairs.

The first three pairs of legs are prehensile, the last four pairs ambulatory; all are furnished with spinules.

Only one specimen was obtained by the U. S. Bureau of Fisheries steamer *Albatross* off Lota, Chile, at a depth of 677 fathoms in yellow mud.

*Type-specimen*.—Cat. No. 43654, U.S.N.M.

This species differs from all the known species of the genus in the form of the head, which has the antero-lateral angles produced and obliquely truncate, and in having the two basal articles of the peduncle of the second antennæ directed forward.

**EXCIROLANA BRAZILIENSIS, new species.**

Body oblong-ovate, convex. Length  $4\frac{1}{2}$  mm.; width 2 mm. Color in alcohol, yellow, marked with arborescent black markings.

Head about twice as wide as long; antero-lateral angles rounded. Anterior margin produced in the middle in a long, narrow process between the basal articles of the antennæ and dilated at its extremity, which is confluent with the frontal lamina. Eyes large, subquadrate, and occupying almost the entire lateral margin; they are separated by a distance equal to the width of one eye. The first pair of antennæ have the two basal articles of the peduncle subequal and dilated; the third article is narrower, but not longer than the second; the flagellum is composed of 10 articles, and extends to the posterior margin of the third thoracic segment. The second antennæ have a peduncle composed of 5 articles, the first four of which are short, the first and second being subequal, and the third and fourth subequal, each of the second pair being twice as long as either of the first pair; the fifth is twice as long as the fourth; the flagellum is composed of 13 articles and extends to the posterior margin of the fifth thoracic segment.

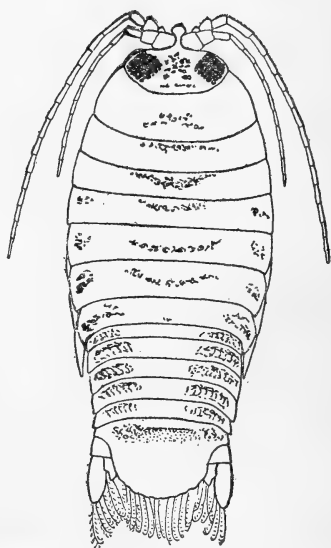


FIG. 2.—EXCIROLANA BRAZILIENSIS  $\times 15$ .

The first, fifth, and sixth segments of the thorax are the longest and are subequal; the second and third segments are the shortest and are subequal; the fourth and seventh are subequal. Epimera are present on all the segments with the exception of the first and are in the form of subquadrate plates, which in the last four have the outer post-lateral angles slightly produced backward.

The first 5 segments of the abdomen are short and subequal, the first being half covered by the seventh thoracic segment; all 5 segments are free at the sides, the last not being covered by the pre-

ceding segment. The sixth or terminal segment is widely rounded posteriorly, crenulate, and fringed with long plumose hairs. There is a crescentiform depressed area near the base of the segment. The peduncle of the uropoda is slightly produced at the inner posterior angle; the outer branch is long, oval in shape, about twice as long as the inner branch, is posteriorly rounded, and extends some distance beyond the tip of the terminal abdominal segment; the inner branch does not quite reach the tip of the terminal segment and is notched on the exterior margin near the posterior extremity. Both branches are fringed with long, plumose hairs, the outer margins being naked.

The first 3 pairs of legs are prehensile, the last 4 pairs ambulatory; all are thickly furnished with spinules.

Only one specimen was collected by the U. S. Bureau of Fisheries steamer *Albatross* at station 2758, off Cape St. Roque, Brazil, at a depth of 20 fathoms, among broken shells.

*Type-specimen*.—Cat. No. 43655, U.S.N.M.

This species is close to *Excirolana armata* (Dana)<sup>1</sup> from Rio Janeiro, but differs in the much larger eyes, the shape of abdomen and uropods, and in the proportions and length of the latter.

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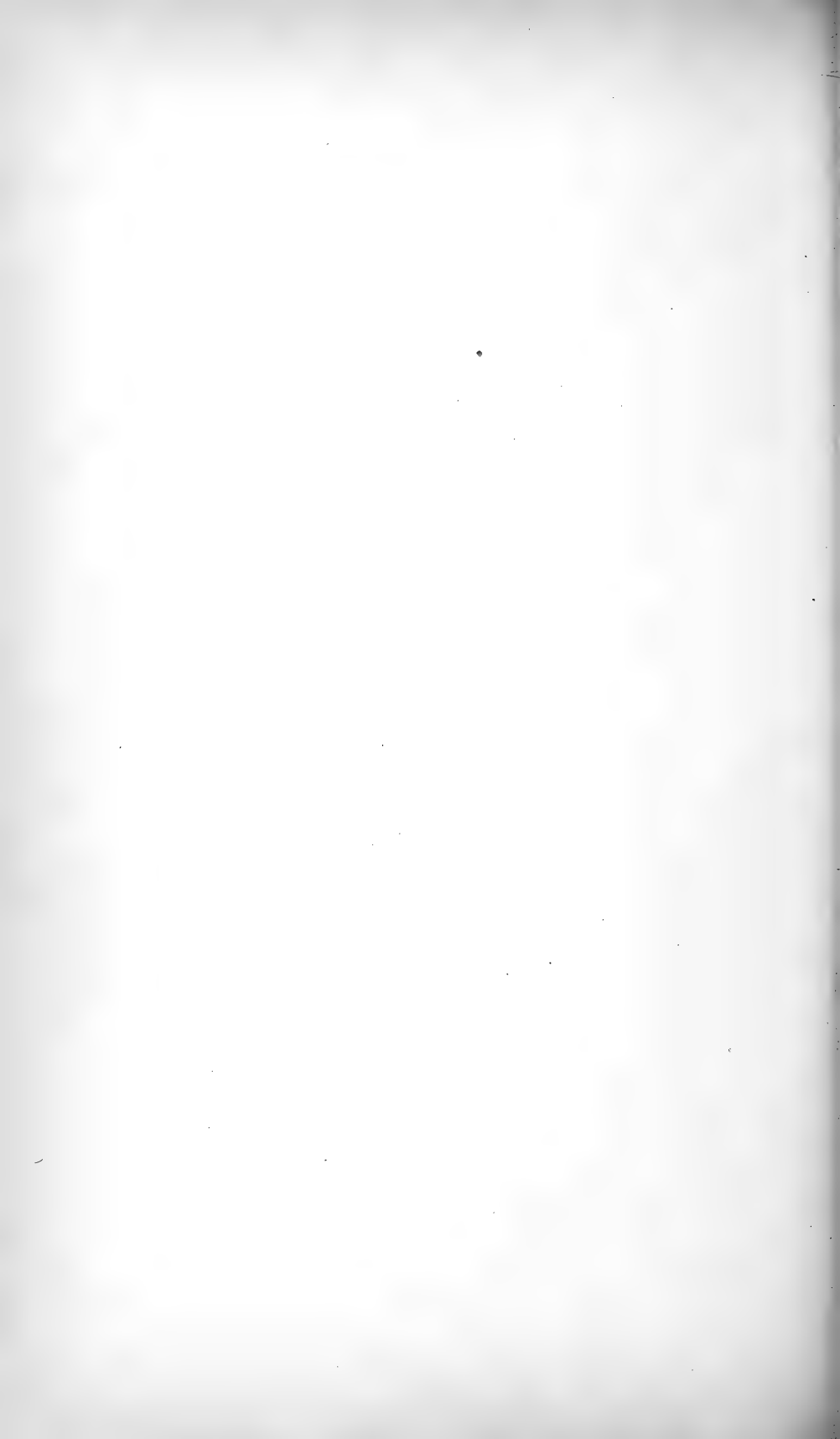
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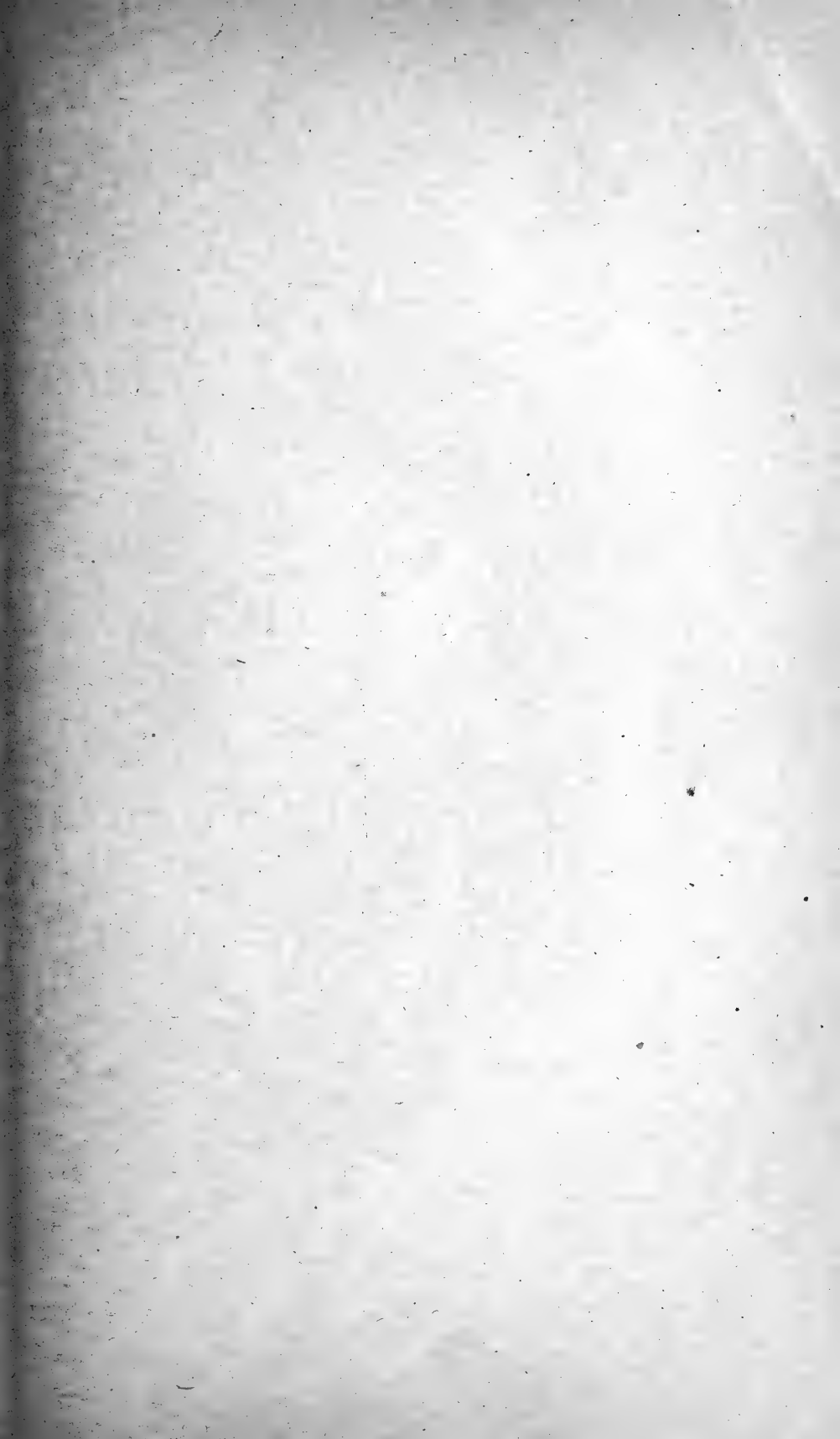
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<sup>1</sup> U. S. Expl. Exp., vol. 14, Crust., 1853, p. 771, pl. 51, fig. 5 a-e.











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Bulletin of the Museum of Comparative Zoölogy

AT HARVARD COLLEGE.

VOL. LIV. No. 15.

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( SOME CUBAN CRUSTACEA.

BY MARY J. RATHBUN.

WITH NOTES ON THE ASTACIDAE, BY WALTER FAXON, AND  
A LIST OF ISOPODA, BY HARRIET RICHARDSON.

WITH FIVE PLATES.

CAMBRIDGE, MASS., U. S. A.:  
PRINTED FOR THE MUSEUM.

OCTOBER, 1912.

REPORTS ON THE SCIENTIFIC RESULTS OF THE EXPEDITION TO THE EASTERN TROPICAL PACIFIC, IN CHARGE OF ALEXANDER AGASSIZ, BY THE U. S. FISH COMMISSION STEAMER "ALBATROSS," FROM OCTOBER, 1904, TO MARCH, 1905, LIEUTENANT COMMANDER L. M. GARRETT, U. S. N., COMMANDING, PUBLISHED OR IN PREPARATION:—

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| <p>A. AGASSIZ. V.<sup>5</sup> General Report on the Expedition.</p> <p>A. AGASSIZ. I.<sup>1</sup> Three Letters to Geo. M. Bowers, U. S. Fish Com.</p> <p>A. AGASSIZ and H. L. CLARK. The Echini.</p> <p>H. B. BIGELOW. XVI.<sup>16</sup> The Medusae.</p> <p>H. B. BIGELOW. XXIII.<sup>23</sup> The Siphonophores.</p> <p>H. B. BIGELOW. XXVI.<sup>26</sup> The Ctenophores.</p> <p>R. P. BIGELOW. The Stomatopods.</p> <p>O. CARLGREN. The Actinaria.</p> <p>S. F. CLARKE. VIII.<sup>8</sup> The Hydroids.</p> <p>W. R. COE. The Nemerteans.</p> <p>L. J. COLE. XIX.<sup>19</sup> The Pycnogonida.</p> <p>W. H. DALL. XIV.<sup>14</sup> The Mollusks.</p> <p>C. R. EASTMAN. VII.<sup>7</sup> The Sharks' Teeth.</p> <p>S. GARMAN. XII.<sup>12</sup> The Reptiles.</p> <p>H. J. HANSEN. The Cirripeds.</p> <p>H. J. HANSEN. XXVII.<sup>27</sup> The Schizopods.</p> <p>S. HENSHAW. The Insects.</p> <p>W. E. HOYLE. The Cephalopods.</p> <p>W. C. KENDALL and L. RADCLIFFE. XXV.<sup>25</sup> The Fishes.</p> <p>C. A. KOFOID. III.<sup>3</sup> IX.<sup>9</sup> XX.<sup>20</sup> The Protozoa.</p> <p>C. A. KOFOID and J. R. MICHENER. XXII.<sup>22</sup> The Protozoa.</p> | <p>C. A. KOFOID and E. J. RIGDEN. XXIV.<sup>24</sup> The Protozoa.</p> <p>P. KRUMBACH. The Sagittae.</p> <p>R. VON LENDENFELD. XXI.<sup>21</sup> The Siliceous Sponges.</p> <p>H. LUDWIG. The Holothurians.</p> <p>H. LUDWIG. The Starfishes.</p> <p>H. LUDWIG. The Ophiurans.</p> <p>G. W. MÜLLER. The Ostracods.</p> <p>JOHN MURRAY and G. V. LEE. XVII.<sup>17</sup> The Bottom Specimens.</p> <p>MARY J. RATHBUN. X.<sup>10</sup> The Crustacea Decapoda.</p> <p>HARRIET RICHARDSON. II.<sup>2</sup> The Isopods.</p> <p>W. E. RITTER. IV.<sup>4</sup> The Tunicates.</p> <p>ALICE ROBERTSON. The Bryozoa.</p> <p>B. L. ROBINSON. The Plants.</p> <p>G. O. SARS. The Copepods.</p> <p>F. E. SCHULZE. XI.<sup>11</sup> The Xenophyphoras.</p> <p>H. R. SIMROTH. The Pteropods and Heteropods.</p> <p>E. C. STARKS. XIII.<sup>13</sup> Atelaxia.</p> <p>TH. STUDER. The Alcyonaria.</p> <p>JH. THIELE. XV.<sup>15</sup> Bathysciadium.</p> <p>T. W. VAUGHAN. VI.<sup>6</sup> The Corals.</p> <p>R. WOLTERECK. XVIII.<sup>18</sup> The Amphipods.</p> <p>W. McM. WOODWORTH. The Annelids.</p> |
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<sup>1</sup> Bull. M. C. Z., Vol. XLVI., No. 4, April, 1905, 22 pp.

<sup>2</sup> Bull. M. C. Z., Vol. XLVI., No. 6, July, 1905, 4 pp., 1 pl.

<sup>3</sup> Bull. M. C. Z., Vol. XLVI., No. 9, September, 1905, 5 pp., 1 pl.

<sup>4</sup> Bull. M. C. Z., Vol. XLVI., No. 13, January, 1906, 22 pp., 3 pls.

<sup>5</sup> Mem. M. C. Z., Vol. XXXIII., January, 1906, 90 pp., 96 pls.

<sup>6</sup> Bull. M. C. Z., Vol. L., No. 3, August, 1906, 14 pp., 10 pls.

<sup>7</sup> Bull. M. C. Z., Vol. L., No. 4, November, 1906, 26 pp., 4 pls.

<sup>8</sup> Mem. M. C. Z., Vol. XXXV., No. 1, February, 1907, 20 pp., 15 pls.

<sup>9</sup> Bull. M. C. Z., Vol. L., No. 6, February, 1907, 48 pp., 18 pls.

<sup>10</sup> Mem. M. C. Z., Vol. XXXV., No. 2, August, 1907, 56 pp., 9 pls.

<sup>11</sup> Bull. M. C. Z., Vol. LI., No. 6, November, 1907, 22 pp., 1 pl.

<sup>12</sup> Bull. M. C. Z., Vol. LII., No. 1, June, 1908, 14 pp., 1 pl.

<sup>13</sup> Bull. M. C. Z., Vol. LII., No. 2, July, 1908, 8 pp., 5 pls.

<sup>14</sup> Bull. M. C. Z., Vol. XLIII., No. 6, October, 1908, 285 pp., 22 pls.

<sup>15</sup> Bull. M. C. Z., Vol. LII., No. 5, October, 1908, 11 pp., 2 pls.

<sup>16</sup> Mem. M. C. Z., Vol. XXXVII., February, 1909, 243 pp., 48 pls.

<sup>17</sup> Mem. M. C. Z., Vol. XXXVIII., No. 1, June, 1909, 172 pp., 5 pls., 3 maps.

<sup>18</sup> Bull. M. C. Z., Vol. LII., No. 9, June, 1909, 26 pp., 8 pls.

<sup>19</sup> Bull. M. C. Z., Vol. LII., No. 11, August, 1909, 10 pp., 3 pls.

<sup>20</sup> Bull. M. C. Z., Vol. LII., No. 13, September, 1909, 48 pp., 4 pls.

<sup>21</sup> Mem. M. C. Z., Vol. XLI., August, September, 1910, 323 pp., 56 pls.

<sup>22</sup> Bull. M. C. Z., Vol. LIV., No. 7, August, 1911, 38 pp.

<sup>23</sup> Mem. M. C. Z., Vol. XXXVIII., No. 2, December, 1911, 232 pp., 32 pls.

<sup>24</sup> Bull. M. C. Z., Vol. LIV., No. 10, February, 1912, 16 pp., 2 pls.

<sup>25</sup> Mem. M. C. Z., Vol. XXXV., No. 3, April, 1912, 98 pp., 8 pls.

<sup>26</sup> Bull. M. C. Z., Vol. LIV., No. 12, April, 1912, 38 pp., 2 pls.

<sup>27</sup> Mem. M. C. Z., Vol. XXXV., No. 4, July, 1912, 124 pp., 12 pls.

Bulletin of the Museum of Comparative Zoölogy

AT HARVARD COLLEGE.

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SOME CUBAN CRUSTACEA.

BY MARY J. RATHBUN.

WITH NOTES ON THE ASTACIDAE, BY WALTER FAXON, AND  
A LIST OF ISOPODA, BY HARRIET RICHARDSON.

WITH FIVE PLATES.

CAMBRIDGE, MASS., U. S. A.:  
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OCTOBER, 1912.





No. 15.— *Some Cuban Crustacea.*

By MARY J. RATHBUN.

*With notes on the Astacidae, by WALTER FAXON, and a list of Isopoda,  
by HARRIET RICHARDSON.*

DURING a trip to western Cuba last February and March, Dr. Thomas Barbour obtained several species of Crustacea, including two new shrimps living in caves. These are not only very distinct from any previously recorded, but represent two widely different families. One is a Palaemonetes, (Palaemonidae), living in fresh water and blind like the two cave-dwelling species of the genus already known;<sup>1</sup> the other is one of the Hippolytidae, found in slightly brackish water, and having well-developed ocular pigment. No member of this family has heretofore been found in caves, or to my knowledge, in brackish water.

PALAEEMONIDAE.

PALAEEMONETES CALCIS, sp. nov.

Plate 1, figs. 1-5.

*Type*.— M. C. Z., 7,415. Cuba: Pool in a cave between Madruga and Aguacate. Thomas Barbour.

Body stout; carapace as long as the last 4 segments of the abdomen, high and thick; the median carina begins at the cervical suture, is subacute, and bears a single sharp spine a little behind the line of the orbits; the rostrum is about  $\frac{2}{3}$  as long as the remainder of the carapace, inclined slightly downward, upper and lower edges thin, unarmed, gradually converging to an acuminate tip, a few scattered

<sup>1</sup> *Palaemonetes antrorum* Benedict, Proc. U. S. nat. mus., Apr. 14, 1896, **18**, p. 615; from artesian well 188 feet deep, San Marcos, Texas.

*Palaemonetes eigenmanni* Hay, Proc. U. S. nat. mus., Feb. 2, 1903, **26**, p. 431, text fig. 2; from cavern at Ashton, Cuba.

hairs on upper margin; a spine on the anterior margin of the carapace above the base of the antenna.

Eyes short, stout, subconical, with the end of the cone rounded, and an acute tubercle on the outer side of the summit; eyes without pigment.

Antennules more than  $1\frac{1}{2}$  times as long as the body; peduncle very slightly longer than the rostrum; first segment as broad as long, antero-external spine broad, reaching past the middle of the second segment; second segment broader than long; third segment about as broad as long.

Antennae about  $2\frac{1}{4}$  times as long as the body, the peduncle falling short of the end of the first segment of the antennules; the first segment of the antennae bears a sharp spine on its anterior margin just below the outer angle; scale broad, subovate, reaching a little beyond the antennular peduncle, and armed with a small spine near its outer extremity.

The incisor process of the mandible has a bidentate tip, the molar process has the extremity partially dentate (Plate 1, fig. 4).

The outer maxillipeds if extended would reach beyond the antennal scale by the length of the last segment.

First pair of pereopods slender, reaching beyond the scale by the length of the propodus and half the carpus; ischium expanded below except at proximal end; merus and carpus subequal, carpus a little the longer, widening distally; palm slightly dilated, exceeding the carpus in width somewhat; fingers  $1\frac{1}{2}$  times as long as palm, tapering only near the tip.

Second pair of pereopods as long as the body; ischium no wider than merus and  $\frac{2}{3}$  as long; carpus a little longer than merus and widening from the proximal to the distal end; palm much swollen; fingers slender and of even width to near the tips,  $1\frac{1}{2}$  times as long as palm, scarcely longer than carpus, prehensile edges thin, corneous, translucent, unarmed except near the base, where the dactylus bears a shallow lobe followed by a small tooth, both of which fit closely against a complementary tooth on the fixed finger; tips corneous, crossing well past each other.

Third, fourth, and fifth pairs of pereopods subequal, long and slender, the fifth pair reaching beyond the scale by the length of the dactylus and one half the propodus.

Postero-lateral angle of fourth segment of abdomen almost a right angle; of fifth and sixth segments acute; sixth segment slightly longer than broad; telson  $1\frac{1}{2}$  times length of preceding segment, dor-

sal surface flattened, forming an angle with the lateral surfaces, two dorsal spines on each side near together, just posterior to the middle, posterior margin broadly rounded, armed with 4 pairs of spines, of which the 3 inner pairs are subequal in length, the first and second pairs very weak, the third pair much the strongest, the outer pair very small; both branches of swimming-fan broad, suboval, the outer exceeding the inner branch, as much as the inner does the telson; tooth of outer branch broadly triangular, tipped with a small spine.

*Dimensions*.—Type ♀, total length 36.8 mm. (approx.). Length of carapace 14.8 mm., of abdomen 22 mm. (approx.).

*Color*.—Whitish.

Dr. Barbour says of this species:—

"These shrimps were collected from a pool at the bottom of a deep, steeply sloping, lime tone cave, situated directly beside the calzada which runs from Madruga to Aguacate, just about a kilometer beyond where this calzada branches off from the one from Madruga to Matanzas. They were found in company with the blind isopod, *Cirolana cubensis* Hay. The shrimps were quite abundant and were usually seen swimming slowly about in the water a some distance from the bottom. I caught several individuals on the first trip, but the bottle got broken and I had to return for more. On the second visit I found them much more abundant and obtained the whole lot by wading or swimming about in the water holding a small electric light and dip net. Finally the water became so stirred up that it was impossible to see anything. I saw no blind fish in this cave. I had kindly helping me on this trip Dr. J. L. Bremer and Mr. Elliot C. Bacon."

This species is very distinct from the other cave-dwelling Palaemonetes. It approaches nearest to *P. eigenmanni* Hay which has similar eyes but a more slender body, much longer rostrum, armed above with a series of teeth, and more slender chelae.

#### PALAEMONETES EIGENMANNI Hay.

*Palaemonetes eigenmanni* Hay, Proc. U. S. nat. mus., Feb. 2, 1903, 26, p. 431-433, fig. 2.

Type locality:—Cave at Ashton, southwest of Alquizar, Province of Habana.

Cave near Güira de Melena, Habana Province; Dr. Pedro Perdigon, collector; presented by Dr. Carlos de la Torre; 4 specimens. M. C. Z., 7,427.

The largest specimen that Mr. Hay described was 23 mm. long.

The largest from this locality is 32 mm. (tip of rostrum broken off). The rostrum reaches either just to the end of the scale or a little beyond it; the superior teeth vary from 6 to 9, 3 of which are on the carapace proper or behind the line of the orbits.

The outer of the two long flagella of the antennules is as long as the flagellum of the antennae, or about twice as long as the body.

The postero-lateral angle of the fifth and sixth segments of the abdomen is subacute.

#### PALAEMONETES CUBENSIS Hay.

*Palaemonetes cubensis* Hay, Proc. U. S. nat. mus., Feb. 2, 1903, **26**, p. 433.

Arroyo de la Cruz, Province of Pinar del Rio. One specimen collected by Dr. Rafael del Pino, May 4, 1912, presented by Dr. Carlos de la Torre. M. C. Z., 7,442.

Laguna Las Cañas, Martí, Province of Matanzas. Two specimens collected by Dr. Rafael Gómez Guardiola, April 25, 1912, presented by Dr. Carlos de la Torre. M. C. Z., 7,447.

#### MACROBRACHIUM OLFERSII (Wiegmann).

*Palaemon olfersii* Wiegmann, Arch. f. naturgesch., 1836, **2**, **1**, p. 150.

Near Guaos, Jurisdiccion de Cienfuegos. M. C. Z., 7,421. One specimen was infested with an isopod parasite (*Probopyrus panamensis* Richardson) in its left branchial cavity.

### HIPPOLYTIDAE.

The genera of this family are usually characterized by the presence or absence of a cutting edge and a palp on the mandible, and the number of segments (varying from 2 to "many") into which the carpus or wrist-joint of the second pair of pereopoda is divided.

The new form described below resembles *Latreutes* Stimpson,<sup>1</sup> *Platybema* Bate,<sup>2</sup> and *Nauticaris* Bate,<sup>3</sup> in lacking a cutting edge on the mandible, while differing from them in the large number of carpal segments of the second foot. In this respect it resembles certain genera established by Bate, viz. *Chorismus*,<sup>4</sup> *Merhippolyte*,<sup>5</sup> and *Amphiplectus*,<sup>6</sup> all of which, however, have a cutting edge on the mandible.

<sup>1</sup> Proc. Acad. nat. sci. Phila., 1860, p. 27 [96].

<sup>2</sup> Challenger rept. Zool., 1888, **24**, part 52, p. 578.

<sup>3</sup> *Op. cit.*, p. 602.

<sup>4</sup> *Op. cit.*, p. 616.

<sup>5</sup> *Op. cit.*, p. 618.

<sup>6</sup> *Op. cit.*, p. 622.

## BARBOURIA, gen. nov.

Body stout; rostrum small, compressed laterally.

Antennulae and antenna very long.

Antennular scale vertically placed.

Mandibles with a 3-jointed palp, and no cutting edge.

First maxilla (or maxillula) with two endites.

Second maxillipeds composed of 6 segments.

Outer maxilliped provided with an exopod and epipod; first, second, third and fourth pereopods with epipods.

Carpus of second pereopods many-jointed.

Type species, *Barbouria poeyi*, sp. nov.

## BARBOURIA POEYI, sp. nov.

Plates 2-5, figs. 6-22.

*Type*.—M. C. Z., 7,418. Cave near seashore, between Morro Castle and Cojimar; March 10, 1912. Thomas Barbour.

Thorax stouter than abdomen; carapace strongly arched both in side and front views; median carina prominent except posteriorly where it fades out gradually toward the posterior margin; the downward slope of the anterior half is continued by the upper margin of the rostrum, although the latter may be a little more horizontal; a row of from 4 to 6 spines begins at the anterior third of the carina and is continued on the rostrum; usually 3, sometimes 2, of these spines are on the carapace proper; rostrum short, reaching to middle, or nearly to middle, of second segment of antennules, acutely pointed, armed below with from 2 to 4 small spines. Two slender spines near anterior margin of carapace, one on the suborbital lobe, the other behind the antenna.

Eyestalks short and stout, subconical, terminating in large, dark blue corneae.

Antennular peduncle stout, less than half as long as carapace, excluding rostrum; first segment twice as long as wide, its external scale turned almost vertically; scale suboval, shorter than the segment itself, base thickened, outer surface concave, having a broad longitudinal furrow, upper margin armed near its extremity with a small spine; second segment shorter than first; third  $\frac{2}{3}$  as long as second; flagella about  $1\frac{1}{4}$  times as long as body.

Antennal peduncle reaching to the end of first segment of antennular peduncle; scale extending considerably beyond antennular peduncle,

narrowing toward tip, two longitudinal grooves above, a small tooth at end of outer margin which overreaches blade of scale; flagellum more than twice as long as body.

Mandible with a stout molar process and a 3-jointed palp; the corneous extremity of the molar process has a crenulated edge on one side; the first and second segments of palp are of subequal length, the third segment is about twice as long as the second, and has a fringe of long bristles attached at and near the tip.

The outer maxillipeds are stoutish and surpass the antennal scale by  $\frac{1}{3}$  the length of the terminal segment; this segment is subsquamose, being covered with deep pits from which arise fine setae.

The first pair of pereiopods are shorter than the maxillipeds and reach beyond their penultimate segment only by the length of the fingers; the carpus widens considerably from the proximal to the distal end; propodus nearly as long as carpus; palm swollen; fingers  $\frac{2}{3}$  as long as palm, meeting throughout, tips corneous.

Second pair of pereiopods filiform, very long, reaching beyond the antennal scale by the length of the propodus and carpus and nearly half the length of the merus; the carpal segments vary from 26 to 32; the merus also is faintly subdivided into segments varying from 12 to 17.

Third, fourth, and fifth pairs of feet filiform, similar, the merus of the third pair reaching a little past the middle of the scale, of the fifth pair to the base of the scale; the third and fourth pairs are similar in length, the propodus of the fifth pair is greatly elongated, being  $1\frac{1}{2}$  times as long as that of the fourth pair; dactyli short and stout, tipped with a corneous spine which is nearly half as long as the remainder of the segment; 2 more slender corneous spines on the lower margin.

The abdomen in its highest part is only about  $\frac{2}{3}$  the height of the carapace; postero-lateral angles of third and fourth segments rounded, of fifth and sixth segments armed with a short spine; length of telson  $1\frac{1}{3}$  times the sixth segment; the distance between the 2 pairs of dorsal spinules is equal to the distance between the posterior pair and the extremity; the terminal spines consist of a pair situated at the outer angles, and longer than the posterior width of the segment, a pair of short ones originating above and overlapping the long pair, and a submedian pair of intermediate length originating at a lower level than the others. The inner branch of the swimming fan is narrow-oval, and reaches just to the end of the telson, exclusive of spines; the outer branch is much larger, reaches nearly to the end of the

longest spines on the telson; it bears a slender, movable spine near the end of its outer margin.

*Dimensions*.—Type ♀, total length of body 42 mm., length of carapace 14.5 mm., of abdomen 26 mm. (approx.)

Dr. Barbour's notes on this species are quoted in full:—

"This is how we came to get the new red shrimps. Sitting with Dr. Carlos de la Torre at his house one afternoon looking over some manuscript notes of Poey's, which he is editing, we came across a bare statement on a sheet of paper in Poey's portfolio that in a cave between Morro Castle and Cojimar there were shrimps which the country people said were already cooked, they looked so red. We became quite interested over this note and Torre suggested at once that we get a boat and go over to Morro Castle where Poey's old fisherman-collector lived. It was quite dark and we had some difficulty finding a boat along the waterfront, but finally secured one, rowed over and found the man, who said that he remembered distinctly where the cave was, and that he himself had told Poey of the existence of these shrimps. He promised to go with us the next morning. Bright and early the following day Dr. J. L. Bremer, Dr. de la Torre, and myself all returned to the Morro where we met our fisherman friend with a motley following. A long, hot walk through the scrub brought us to two sink holes, some distance apart, evidently places where the roof of two low caves had partly fallen in, permitting one to look down a great depth into a very deep cavern, almost full of clear, slightly brackish water, which we were told, fluctuated slightly with each tide. In both of these caves the red shrimps were very abundant and in one of them a blind fish, probably *Stygicola*, was also seen. In life they were a beautiful, translucent, crimson color, while the long antennae and the first pair of chelate appendages were pure white, contrasting strongly with the color of the body of the animal and the other legs. We brought a number of these back to Havana alive as well as a supply of water from the cave. We had hoped that it might be possible to bring some north with us alive, but in this we were entirely unsuccessful."

#### POTAMONIDAE.

##### EPILOBOCERA CUBENSIS Stimpson.

*Epilobocera cubensis* Stimp., Ann. Lyc. nat. hist. N. Y., 1860, 7, p. 234.

San Diego de los Baños. M. C. Z., 7,413.

## EPILOBOCERA ARMATA Smith.

*Epilobocera armata* Smith, Trans. Conn. acad. arts & sci., 1870, **2**, p. 151, pl. 5, fig. 2.

Near Guaos, Jurisdicion de Cienfuegos; young specimens. M. C. Z., 7,414.

Not previously recorded from western Cuba.

## ASTACIDAE.

By WALTER FAXON.

## CAMBARUS CUBENSIS Erichson.

*Astacus* (*Cambarus*) *cubensis* Erichs., Arch. f. naturgesch., 1846, **12**, 1, p. 100.

Eight specimens (3 ♂, 5 ♀), M. C. Z., 7,407, were collected by Dr. Barbour in the Botanic Garden of the Institute, Principe, Habana.

## CAMBARUS CUBENSIS CONSOBRINUS (Saussure).

*Cambarus consobrinus* Sauss., Rev. et mag. de zool., 1857, ser. 2, **9**, p. 101. Mem. Soc. phys. hist. nat. Genève, 1858, **14**, p. 457, pl. 3, fig. 21.

Nine specimens (5 ♂, 4 ♀), M. C. Z., 7,343, were secured by Dr. Barbour at San Antonio de los Baños, in the interior of the Province of Habana. They were got from boys who were using them for fish-bait. These specimens differ from the true *C. cubensis* Erichs. in the following regards:—the rostrum is narrower, more deeply concave above; its margins more elevated and less convergent between the base and the pair of lateral spines near the distal end; these lateral spines, moreover, are much better developed than they are in *C. cubensis*, and the rostral acumen is longer; the post-orbital ridge is more prominent, distinctly grooved along its outer face, and terminates anteriorly in an acute spine much more strongly emphasized than in the typical *C. cubensis*; there is, too, an evident lateral spine on each side of the carapace, on the hind border of the cervical groove,—a spine which is not present in typical specimens of *C. cubensis*. The external sexual organs are alike in the typical form and the form *consobrinus*.



Cotypes of Saussure's *Cambarus consobrinus* are now dispersed in the Museums of Geneva, Paris, Berlin, and Washington. Belike Saussure's material embraced some of the typical form of *C. cubensis*, though his description and figures were based on the form with long rostral acumen, and distinct rostral and lateral thoracic spines; the type locality of *consobrinus*, moreover, is the *central part* of the island.

In the cotype in the U. S. national museum (No. 20,684), a male dried and transfixed with a pin, the rostrum is abnormal, the right margin being pared away toward the tip, carrying with it the right marginal spine. This deformity was evidently present in the living specimen. On the left side the marginal rostral tooth or spine is well developed, as are also the thorns at the front end of the post-ocular ridges. The lateral thoracic spines are also fairly well marked.

CAMBARUS CUBENSIS RIVALIS, subsp. nov.

This form is a denizen of the mountain streams of western Cuba. The extent of its distribution remains to be determined by further exploration of the island. The type specimens (M. C. Z., 7,406), two males of the second form and three females, were captured by Dr. Barbour in a mountain stream near San Diego de los Baños, in the Province of Pinar del Rio. There are also specimens in the U. S. national museum from the same place (28,626, 28,627) and from a mountain brook north of the town of Pinar del Rio (23,656, 23,657).

It differs from the typical form of *C. cubensis* (which lives in the low country on the coast of Cuba) in having a much shorter and broader areola, a shorter, broader, and more heavily granulated chela; the sides of the rostrum, too, are more nearly parallel and bear a pair of distinct lateral spines at the base of the acumen. In so far as the rostrum is concerned it resembles *C. c. consobrinus*, but it differs from that form by its short and wide areola and absence of lateral thoracic spines.

The sexual parts are like those of *C. cubensis*.

Length of an ovigerous female, 44 mm., length of carapace, 21 mm., length of areola, 6 mm., breadth of areola, 2 mm.

**ISOPODA.**

*Determined by Harriet Richardson.*

**CIROLANIDAE.**

**CIROLANA CUBENSIS** Hay.

*Cirolana cubensis* Hay, Proc. U. S. nat. mus., Feb. 2, 1903, **26**, p. 430.

Two specimens (M. C. Z., 7,423) from a cave between Madruga and Aguacate, Province of Habana (Dr. Barbour).

**BOPYRIDIDAE.**

**PROBOPYRUS PANAMENSIS** Richardson.

*Probopyrus panamensis* Rich., Proc. U. S. nat. mus., Aug. 29, 1912, **42**, p. 523.

One specimen (M. C. Z., 7,424) from near Guaos, Province of Santa Clara, on *Macrobrachium olfersii* (Dr. Barbour).

**ARMADILLIDIDAE.**

**CUBARIS MURINA** Brandt.

*Cubaris murina* Brandt, Bull. Soc. imp. Moscou, 1838, **6**, p. 28.

Two specimens (M. C. Z., 7,422) from near Guaos (Dr. Barbour).



PLATE 1.

- Fig. 1. *Palaemonetes calcis*, side view,  $\times 2$ .  
Fig. 2.       "       "       tail-fan, dorsal view,  $\times 8$ .  
Fig. 3.       "       "       antennal scale, ventral view,  $\times 8$   
Fig. 4.       "       "       mandible,  $\times 20$ .  
Fig. 5.       "       "       chela of first pair,  $\times 8$ .

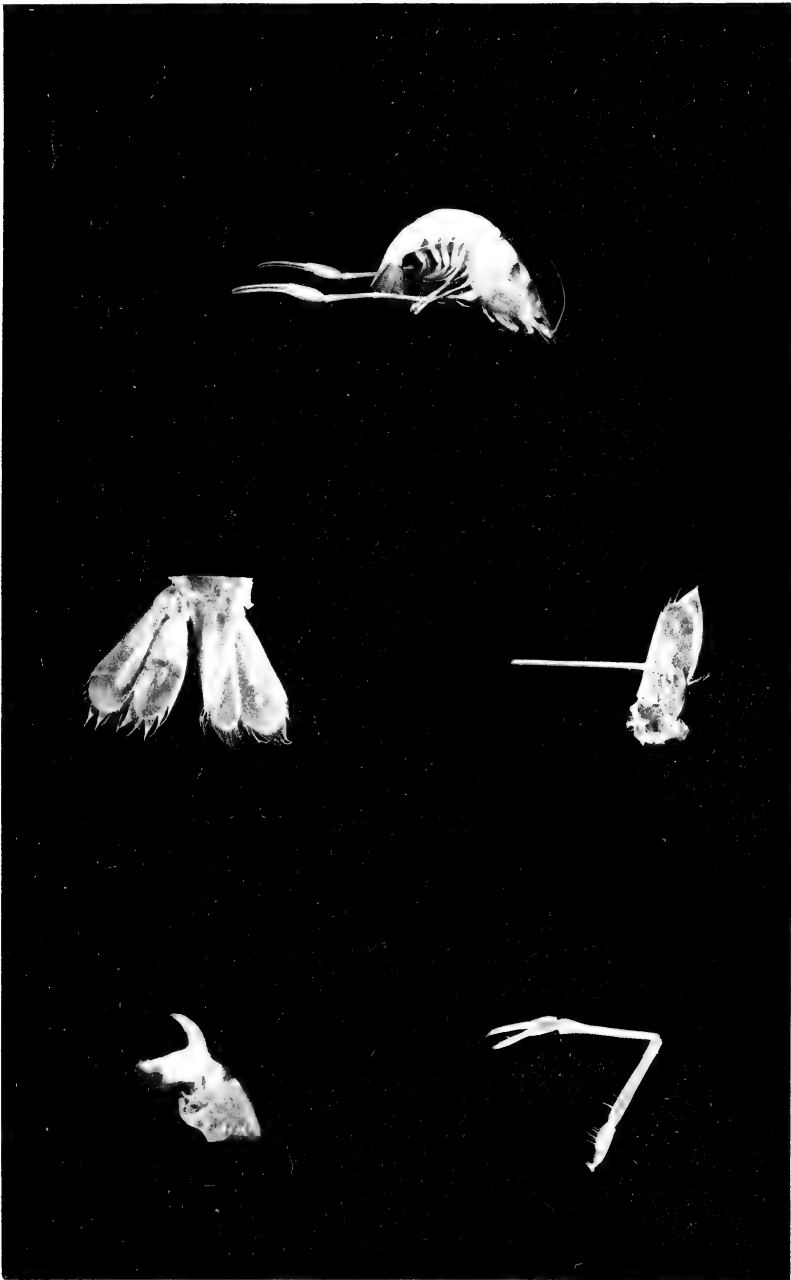


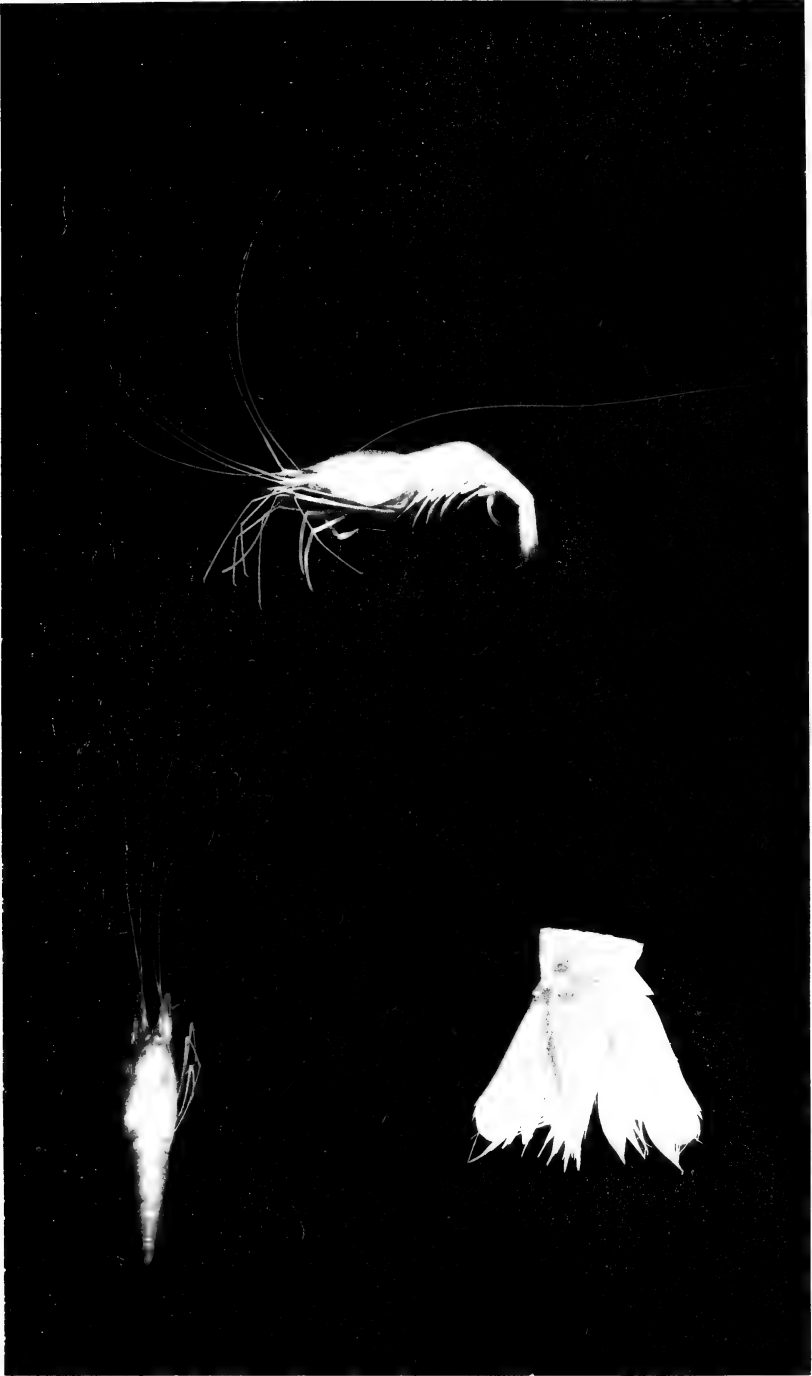




PLATE 2.

- Fig. 6. *Barbouria poeyi*, side view,  $\times 2$ .  
Fig. 7.       "       "       dorsal view,  $\times 2$ .  
Fig. 8.       "       "       tail-fan, dorsal view,  $\times 8$ .





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PLATE 3.

- Fig. 9. *Barbouria poeyi*, mandible,  $\times 20$ .  
Fig. 10.       "       "       palp of mandible,  $\times 26$ .  
Fig. 11.       "       "       first maxilla, proximal endite,  $\times 20$ .  
Fig. 12.       "       "       first maxilla, distal endite,  $\times 20$ .  
Fig. 13.       "       "       first maxillae, proximal endites covering the mandibles,  $\times 20$ .

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PLATE 4.

- Fig. 14. *Barbouria poeyi*, second maxilla,  $\times 20$ .  
Fig. 15.       "       "   first maxilliped,  $\times 20$ .  
Fig. 16.       "       "   second maxilliped,  $\times 20$ .  
Fig. 17.       "       "   third maxilliped,  $\times 8$ .



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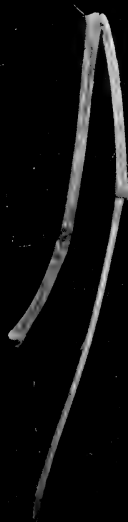
PLATE 5.

- Fig. 18. *Barbouria poeyi*, first pereopod,  $\times 8$ .  
Fig. 19.       "       "       second pereopod,  $\times 8$ .  
Fig. 20.       "       "       third pereopod,  $\times 8$ .  
Fig. 21.       "       "       fourth pereopod,  $\times 8$ .  
Fig. 22.       "       "       fifth pereopod,  $\times 8$ .

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The following Publications of the Museum of Comparative Zoölogy  
are in preparation :—

LOUIS CABOT. Immature State of the Odonata, Part IV.

E. L. MARK. Studies on Lepidosteus, continued.

" On Arachnactis.

A. AGASSIZ and C. O. WHITMAN. Pelagic Fishes. Part II., with 14 Plates.

H. L. CLARK. The "Albatross" Hawaiian Echini.

S. GARMAN. The Plagiostomes.

Reports on the Results of Dredging Operations in 1877, 1878, 1879, and 1880, in charge  
of ALEXANDER AGASSIZ, by the U. S. Coast Survey Steamer "Blake," as follows:—

H. LUDWIG. The Genus Pentacrinus.

A. MILNE EDWARDS and E. L. BOUVIER. The Crustacea of the "Blake."

A. E. VERRILL. The Alcyonaria of the "Blake."

Reports on the Results of the Expedition of 1891 of the U. S. Fish Commission Steamer  
"Albatross," Lieutenant Commander Z. L. TANNER, U. S. N., Commanding, in  
charge of ALEXANDER AGASSIZ, as follows:—

K. BRANDT. The Sagittae.

" The Thalassicolae.

O CARLGREN. The Actinarians.

W. R. COE. The Nemerteans.

REINHARD DOHRN. The Eyes of  
Deep-Sea Crustacea.

H. J. HANSEN. The Cirripeds.

" The Schizopods.

HAROLD HEATH. Solenogaster.

W. A. HERDMAN. The Ascidians.

S. J. HICKSON. The Antipathids.

E. L. MARK. Branchiocerianthus.

JOHN MURRAY. The Bottom Specimens.

P. SCHIEMENZ. The Pteropods and  
Heteropods.

THEO. STUDER. The Alcyonarians.

— The Salpidae and Doliolidae.

H. B. WARD. The Sipunculids.

— The Annelids.

Reports on the Scientific Results of the Expedition to the Tropical Pacific, in charge of  
ALEXANDER AGASSIZ, on the U. S. Fish Commission Steamer "Albatross," from  
August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., Com-  
manding, as follows:—

H. L. CLARK. The Holothurians.

— The Volcanic Rocks.

— The Coralliferous Limestones.

J. M. FLINT. The Foraminifera and  
Radiolaria.

S. HENSHAW. The Insects.

R. VON LENDENFELD. The Silice-  
ous Sponges.

H. LUDWIG. The Starfishes and Ophi-  
urans.

G. W. MÜLLER. The Ostracods.

MARY J. RATHBUN. The Crustacea  
Decapoda.

RICHARD RATHBUN. The Hydro-  
corallidae.

G. O. SARS. The Copepods.

L. STEJNEGER. The Reptiles.

C. H. TOWNSEND. The Mammals,  
Birds, and Fishes.

T. W. VAUGHAN. The Corals, Recent  
and Fossil.

— The Annelids.

PUBLICATIONS  
OF THE  
MUSEUM OF COMPARATIVE ZOÖLOGY  
AT HARVARD COLLEGE.

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There have been published of the BULLETIN Vols. I. to LII.; of the MEMOIRS, Vols. I. to XXIV., and also Vols. XXVI. to XXIX., XXXI. to XXXIV., XXXVII., XXXVIII., and XLI.

Vols. LIII. to LVII. of the BULLETIN, and Vols. XXV., XXX., XXXV., XXXVI., XXXIX., XL., XLII. to XLVIII. of the MEMOIRS, are now in course of publication.

The BULLETIN and MEMOIRS are devoted to the publication of original work by the Professors and Assistants of the Museum, of investigations carried on by students and others in the different Laboratories of Natural History, and of work by specialists based upon the Museum Collections and Explorations.

The following publications are in preparation:—

Reports on the Results of Dredging Operations from 1877 to 1880, in charge of Alexander Agassiz, by the U. S. Coast Survey Steamer "Blake," Lieut. Commander C. D. Sigsbee, U. S. N., and Commander J. R. Bartlett, U. S. N., Commanding.

Reports on the Results of the Expedition of 1891 of the U. S. Fish Commission Steamer "Albatross," Lieut. Commander Z. L. Tanner, U. S. N., Commanding, in charge of Alexander Agassiz.

Reports on the Scientific Results of the Expedition to the Tropical Pacific, in charge of Alexander Agassiz, on the U. S. Fish Commission Steamer "Albatross," from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., Commanding.

Reports on the Scientific Results of the Expedition to the Eastern Tropical Pacific, in charge of Alexander Agassiz, on the U. S. Fish Commission Steamer "Albatross," from October, 1904, to April, 1905, Lieut. Commander L. M. Garrett, U. S. N., Commanding.

Contributions from the Zoölogical Laboratory, Professor E. L. Mark, Director.  
Contributions from the Geological Laboratory.

These publications are issued in numbers at irregular intervals; one volume of the Bulletin (8vo) and half a volume of the Memoirs (4to) usually appear annually. Each number of the Bulletin and of the Memoirs is sold separately. A price list of the publications of the Museum will be sent on application to the Director of the Museum of Comparative Zoölogy, Cambridge, Mass.

36  
TERRESTRIAL ISOPODS COLLECTED IN COSTA  
RICA BY MR. PICADO, WITH THE DESCRIP-  
TION OF A NEW GENUS AND SPECIES

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, United States National Museum

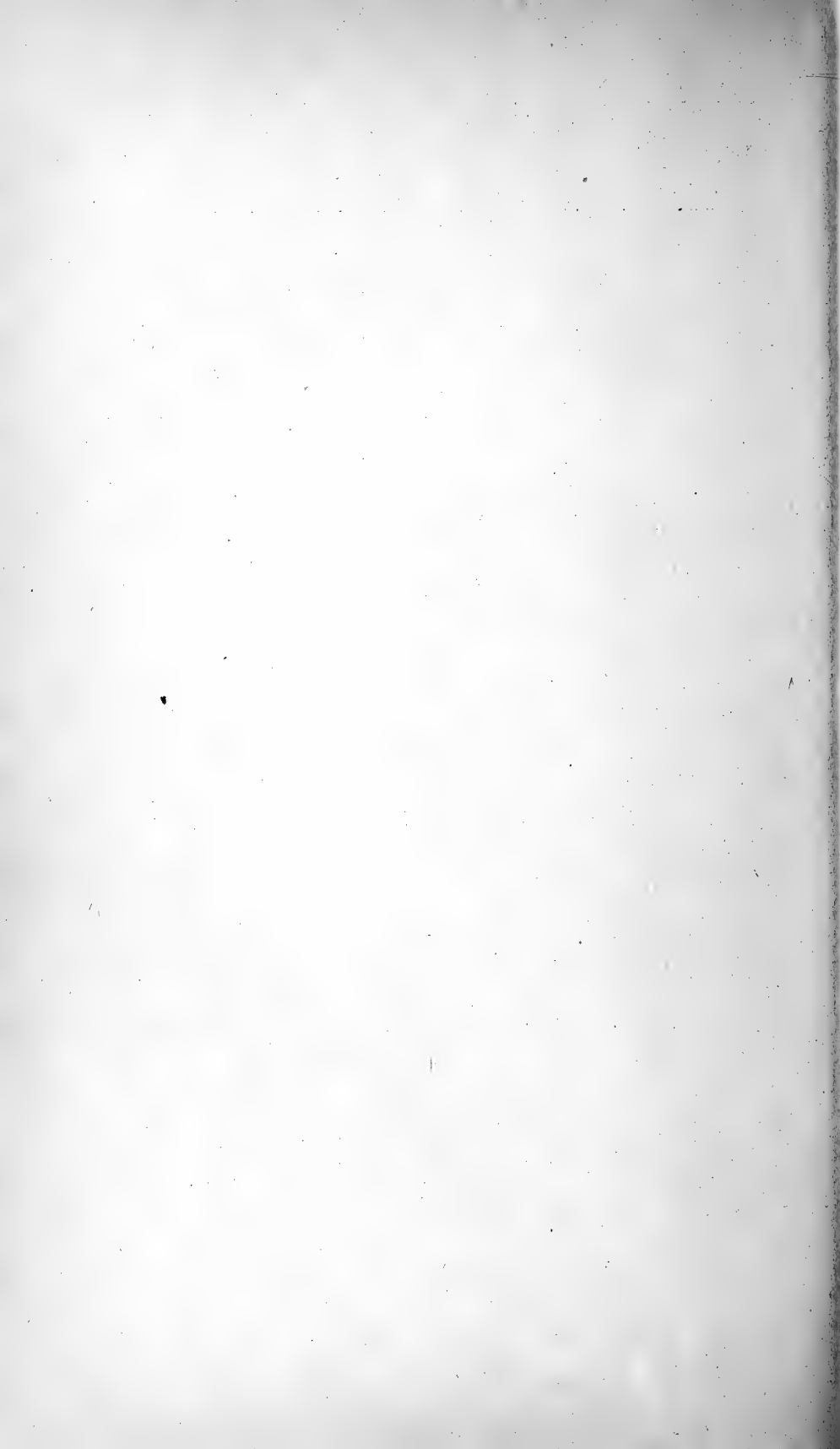
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No. 1954.—From the Proceedings of the United States National Museum,  
Vol. 44, pages 337-340

Published February 20, 1913



Washington  
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1913



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# TERRESTRIAL ISOPODS COLLECTED IN COSTA RICA BY MR. PICADO, WITH THE DESCRIPTION OF A NEW GENUS AND SPECIES.

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By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, United States National Museum.*

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Some terrestrial isopods collected in Costa Rica by Mr. C. Picado were sent by Mr. J. F. Tristan to the United States National Museum for determination. They were found on epiphytic plants of the family Bromeliaceæ ("wild pines") and were mostly collected at an altitude of 2,000–2,500 meters. Among them are some specimens representing a new genus of Oniscidæ.

Other terrestrial isopods collected in Costa Rica by Mr. J. F. Tristan were also sent to the United States National Museum about the same time. These were collected in the Bromelias in the old crater of "Reventado" near the Volcano Irazu. Mr. Tristan writes that the old crater is covered with forest.

## Family. ONISCIDÆ.

### PENTONISCUS, new genus.

Body with the abdomen abruptly narrower than the thorax. Head with median and antero-lateral lobes small.

Second antennæ with a flagellum composed of five articles, the third and fourth rather indistinctly separated.

Mouth parts as in the other genera referred to this family. Inner lamella of the second maxilla furnished with two plumose setæ. Mandibles with molar expansion obsolete, and replaced by a recurved seta; cutting edge formed of three blunt teeth. Maxillipeds with palp composed of three articles, the last very narrow and elongate; masticatory lobe short and truncate at tip.

Terminal segment of abdomen triangular, with apex obtuse.

Uropods of a structure similar to those in the other genera in the family.

The type of the genus is *Pentoniscus pruinus*, new species.

This genus differs from all the known genera of Oniscidæ in having the flagellum of the second antennæ composed of five articles.

## PENTONISCUS PRUINOSUS, new species.

Body oblong-ovate, 4 mm. long and  $1\frac{1}{2}$  mm. wide. Color reddish-brown with wavy lines of yellow on either side of the median line.

Head wider than long, with the front not margined. Antero-lateral lobes small; front slightly produced in the middle in a widely rounded lobe. Eyes very small, black, and situated about the middle of the lateral margin. The second antennæ have the first article short, the second and third subequal, and each a little longer than the first; the fourth is one and a half times longer than the third; the fifth is a little longer than the fourth. The flagellum consists of five articles, the third and fourth being rather indistinctly separated, and a long terminal spine equal in length to the flagellum.

The first segment of the thorax is a little longer than any of the following segments, which are subequal. The post-lateral angles of the last three segments are produced backward; those of the first four segments are rounded.

The abdomen is abruptly narrower than the thorax. The lateral parts of the first two segments are concealed by the seventh thoracic

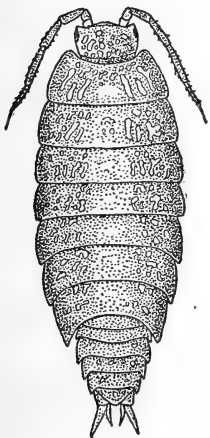


FIG. 1.—PENTONISCUS PRUINOSUS.

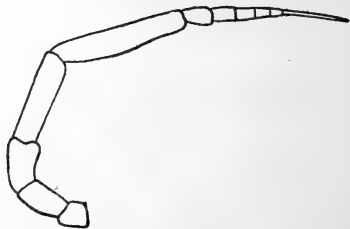


FIG. 2.—PENTONISCUS PRUINOSUS. SECOND ANTENNÆ.



FIG. 3.—PENTONISCUS PRUINOSUS. MAXILLIPED.



FIG. 4.—PENTONISCUS PRUINOSUS. INNER LAMELLA OF SECOND MAXILLA.



FIG. 5.—PENTONISCUS PRUINOSUS. MANDIBLE.

segment. The post-lateral angles of the three following segments are produced backward in very acute angles. The first segment is a little shorter than any of the others, which are subequal. The sixth or terminal segment is triangular, with the apex rounded. The peduncle of the uropoda extends almost to the extremity of the terminal



abdominal segment. The branches are styliform, the inner being the shorter and about equal in length to the terminal abdominal segment; the outer branch is about one and a third times as long as the inner.

About 11 specimens were collected at Estrella, at an altitude of 2,000 meters, by Mr. Picado.

*Locality 7.*—One specimen at La Mica, in the mountains southwest of Orosé. Collected by Mr. Picado.

*Locality 2.*—Fourteen specimens at La Estrella, in the Bromelias, several meters from the ground. Collected by Mr. Picado.

*Locality 6.*—About 16 specimens at La Mica, in the mountains southwest of Orosé. Collected by Mr. Picado.

*Locality 4.*—About 30 specimens at Pitahaya (south of Cartago). Collected by Mr. Picado.

In color and color markings the new species is similar to *Porcelionides pruinosus* (Brandt).

*Type.*—Cat. No. 43771, U.S.N.M.

PHILOSCIA MUSCORUM (Scopoli).

*Locality 3.*—La Pitahaya (south of Cartago). (Color pattern typical.) Collected by Mr. Picado.

*Locality 1.*—La Estrella, in Bromelias, several meters from the ground. Collected by Mr. Picado. The color pattern is somewhat different in these specimens, there being a double series of light patches on each side of the mesosome, one series at the base of the side plates and the other on the outer side of the series of dark patches. The median dark band also has light patches.

*Locality 5.*—La Mica, mountains southwest of Orosé. (About the same as No. 1.) Collected by Mr. Picado.

*Locality 6.*—La Mica, mountains southwest of Orosé. The dark patches are almost entirely obliterated by the presence of the light patches. Collected by Mr. Picado.

*Locality 2.*—(Same as locality 1.) In some specimens the color pattern is the same as No. 1; in others the same as No. 6. Collected by Mr. Picado.

*Locality.*—Reventado. Collected by Mr. Tristan. In some specimens the color pattern is the same as No. 1; in others it is the same as No. 6; in others it is like No. 1, but with a transverse row of light spots on the posterior margin of each of the thoracic segments.

In some of the smaller specimens the first article of the flagellum of the second antennæ is not much longer than either of the other two articles.

In the male specimens the first two pairs of legs have the propodus somewhat more inflated than in the specimens of *Philoscia muscorum* from North America with which I have compared them.

The following were also collected by Mr. Picado:

*Locality 8.*—The specimens are like those from locality 3. Color pattern typical.

*Locality 11.*—Orosé, 1,200 meters altitude, July. The specimens are more like those from locality 8.

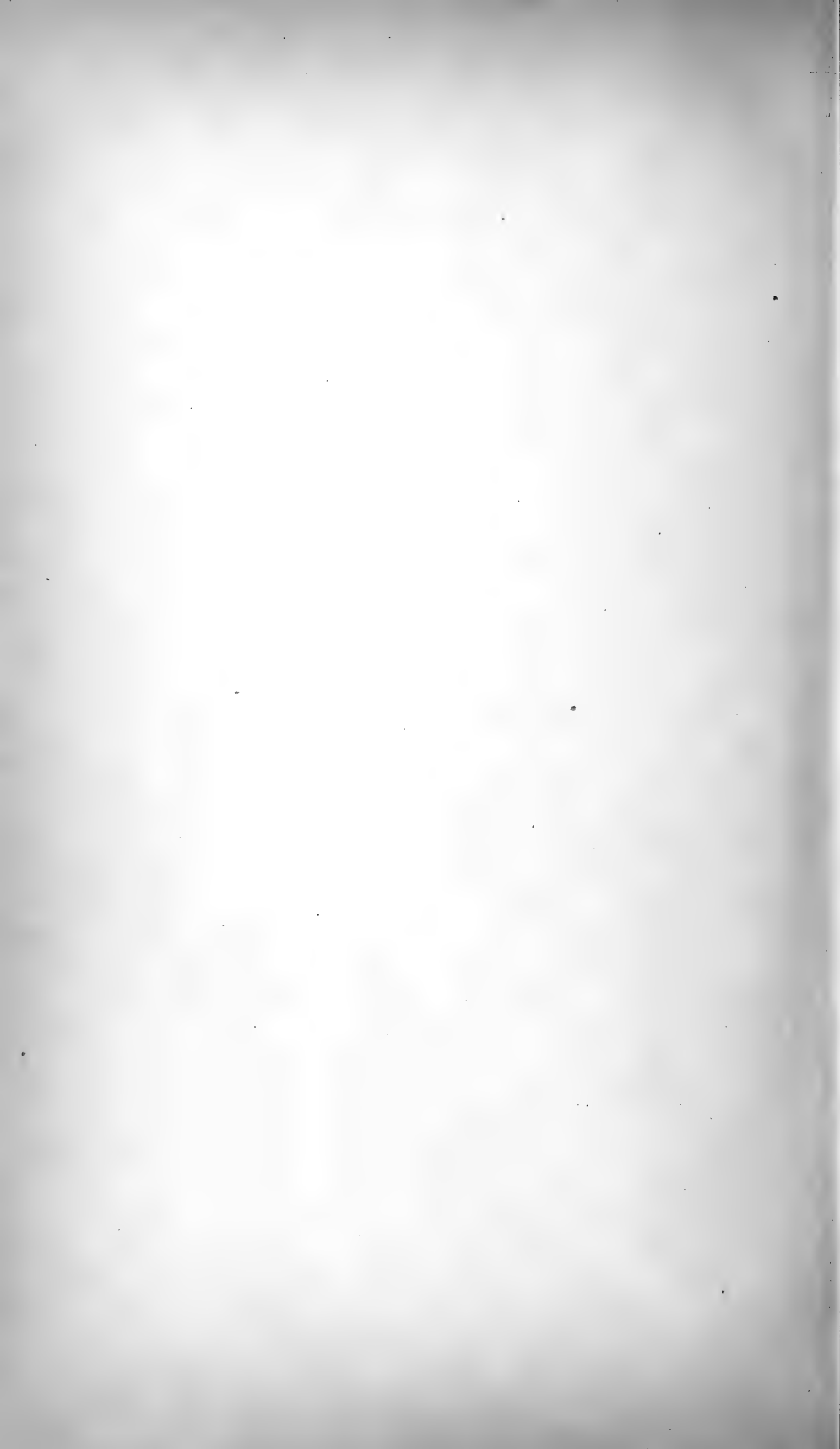
*Locality.*—Planton, 2,500 meters altitude, May. Similar to specimens from locality No. 1.

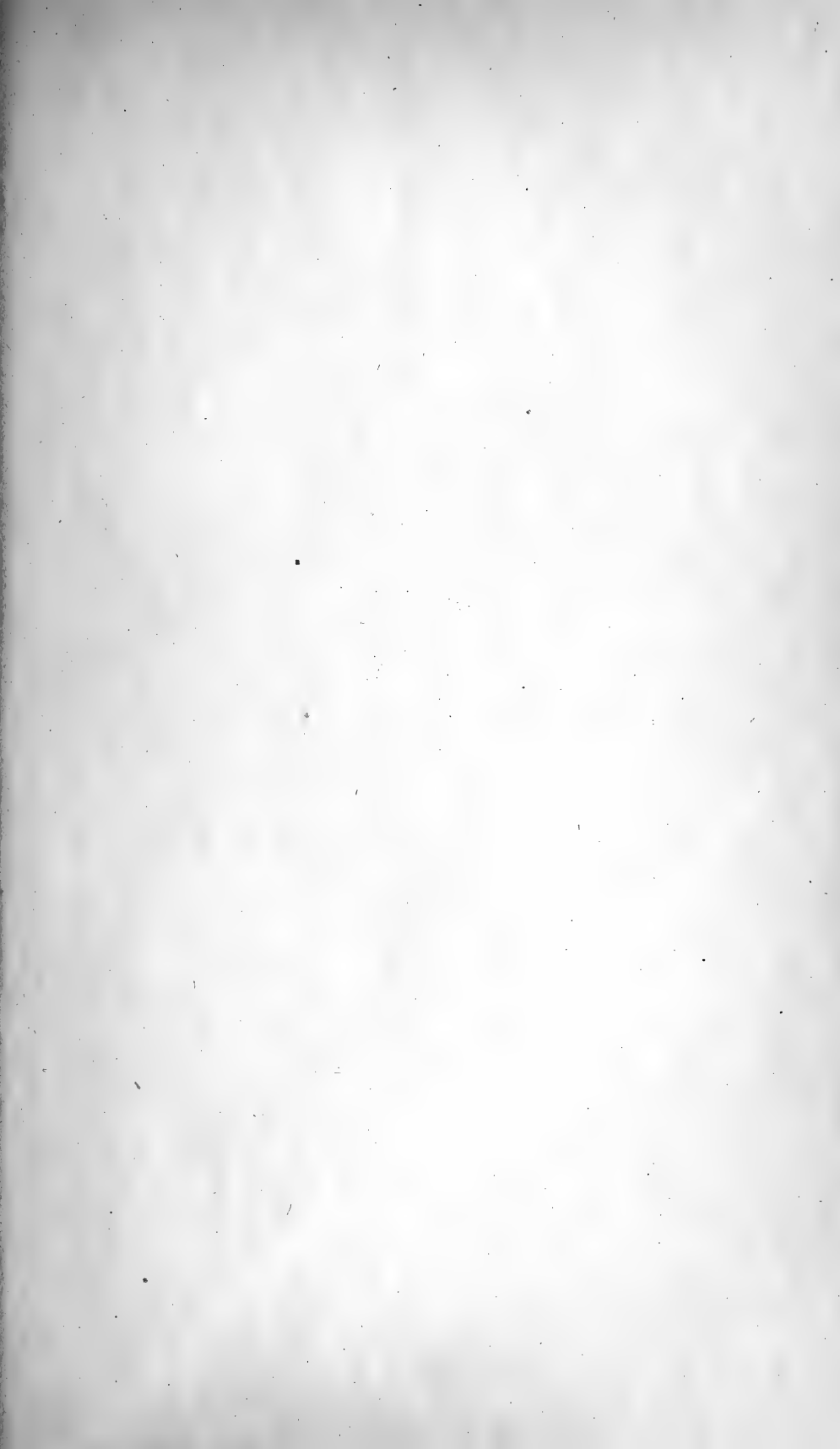
*Locality.*—La Estrella, 2,000 meters altitude, May. In one specimen the color pattern is typical. In two it is like those from locality No. 1. In two others it is still different, being more like No. 6.

**ALLONISCUS, species?**

*Locality 4.*—One imperfect specimen was obtained at Pitahaya, Costa Rica. Collected by Mr. Picado.









M.J.R.	FEB 20 1913
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37  
THE ISOPOD GENUS ICHTHYOXENUS HERKLOTS,  
WITH DESCRIPTION OF A NEW SPECIES  
FROM JAPAN

BY

HARRIET RICHARDSON

Collaborator, Division of Marine Invertebrates, United States National Museum

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THE JOURNAL OF THE  
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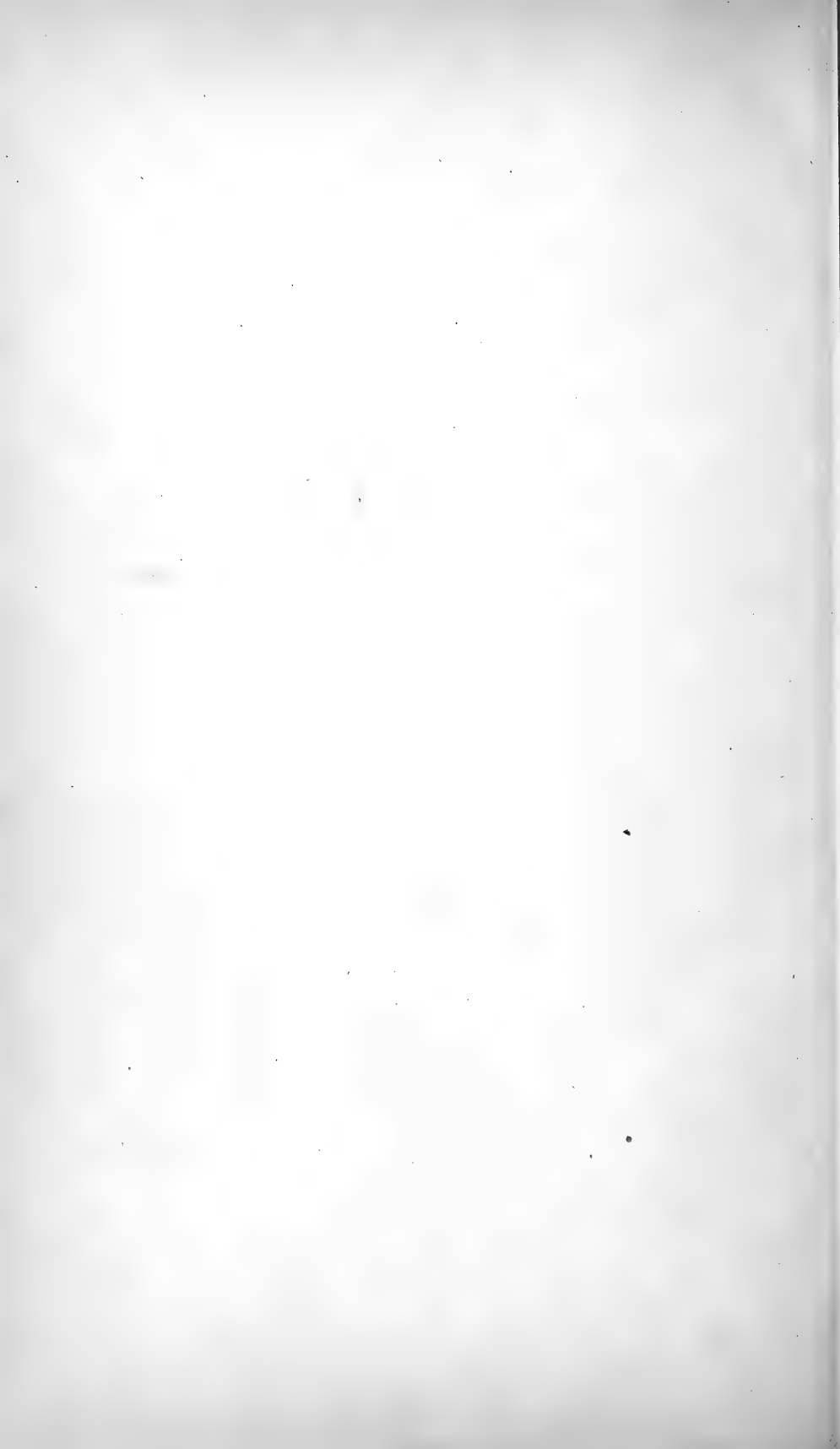
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# THE ISOPOD GENUS *ICHTHYOXENUS* HERKLOTS, WITH DESCRIPTION OF A NEW SPECIES FROM JAPAN.

By HARRIET RICHARDSON,

*Collaborator, Division of Marine Invertebrates, United States National Museum.*

In 1870 Herklots<sup>1</sup> described the type-species of the genus *Ichthyoxenus* which was found parasitic on the fish *Barbodes maculatus* Bleeker from Java. The mode of life of this isopod is peculiar and interesting. It bores a hole in the body of the fish just back of the lateral fin, where it lives with its mate. It enters this cavity when young. As it grows in size, it is unable to leave the body of the fish and becomes many times larger than the opening through which it entered. This species was named after Mr. Jellinghaus, who was the first to notice the parasite, which he called "songkeat," and who in 1860 wrote a note concerning it to the Société physique des Indes néerlandaises.<sup>2</sup> The fish was taken from the River Tjikerang, district of Tjilokotot, regency of Bandung.

The second species of the genus, *Ichthyoxenus montanus*, was described by Schiøedte and Meinert<sup>3</sup> in 1884. It was found on *Puntius sophores* in the Himalayan Mountains.

Up to the present time these two were the only species known.

In 1908 Maj. P. A. Ouwens<sup>4</sup> mentioned another host for *Ichthyoxenus jellinghausii*, the fish *Nemacheilus fasciatus* van Hasselt, from the Tji-Seroema near Batavia.

Not long ago Dr. Harold Heath wrote to me concerning some parasites which were found on Japanese fishes from Lake Biwa. They were described as living in the body of the fish, which they entered through a hole bored just back of the lateral fin. The specimens were sent to the United States National Museum by Mr. Will Thompson, and the parasites proved to be a new species of *Ichthyoxenus*. The hosts are *Acheilognathus rhombeum* (Schlegel),

<sup>1</sup> Archives Néerlandaises des Sciences, vol. 5, 1870, pp. 128-137, pl. 5, figs. 10-18.

<sup>2</sup> Natuurk. Tijdschr. Nederl.-Indië, vol. 22, 1860, p. 378.

<sup>3</sup> Nat. Tidsskrift (3), vol. 14, 1884, pp. 303-309, pl. 11, figs. 10-11.

<sup>4</sup> Natuurk. Tijdschr. Nederl.-Indië, vol. 67, 1908, pp. 29-35.

*Gnathopogon elongata* (Schlegel), *Acheilognathus tabira* Jordan and Thompson, MSS., *Acheilognathus lanceolatum* (Schlegel), and *Acheilognathus cyonostigma* (Jordan and Fowler). I have since found this parasite on *A. limbatum* Jordan and Snyder from the same locality.

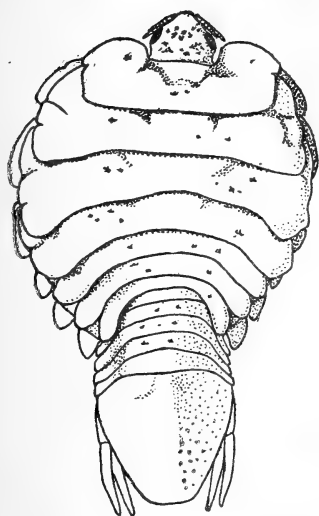


FIG. 1.—*ICHTHYOXENUS JELLINGHAUSII*, BUITENZORG. FEMALE.  $\times 3\frac{1}{2}$ .

This species has been recorded from Bandong and Batavia. The specimen in the United States National Museum is from Buitenzorg, and if the figures of Herklots and Schiødte and Meinert are correct it differs from the type in the following points: The first



FIG. 3.—*ICHTHYOXENUS JELLINGHAUSII*, BUITENZORG. SEVENTH LEG OF FEMALE.  $\times 7\frac{1}{2}$ .

segment of the thorax in the female has the anterior margin deeply excavate in the middle, the excavation being rectangular; the seventh pair of legs have the carpus and merus very much inflated, with the inner margin produced in a rounded expansion; the merus is also much elongated.

For the purpose of comparison with the new species from Japan, I have figured the specimen in

#### *ICHTHYOXENUS JELLINGHAUSII* Herklots.

*Ichthyoxenus jellinghausii* HERKLOTS, Archives Néerlandaises, vol. 5, 1870, pp. 128-137, pl. 5, figs. 10-18.—SCHIØDTE and MEINERT, Naturhistorisk Tidsskrift (3), vol. 14, 1884, pp. 298-303, pl. 11, figs. 5-6.—MAX WEBER, Zool. Ergebnisse, vol. 2, 1892, pp. 557-560, pl. 30, fig. 1.—WILLINK, Natuurk. Tijdschr. Nederl.-Indië, vol. 64, 1905, pp. 156-161.—OUWENS, Natuurk. Tijdschr. Nederl. Indië, vol. 67, 1908, pp. 29-35.

*Locality.*—A male and a female, collected by Dr. Owen Bryant and Mr. William Palmer in Java, are in the United States National Museum. The host is not known.

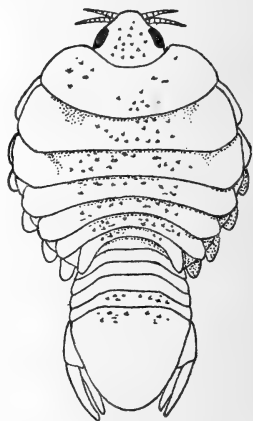


FIG. 2.—*ICHTHYOXENUS JELLINGHAUSII*, BUITENZORG. MALE.  $\times 5\frac{1}{2}$ .

the United States National Museum, which I have identified as *Ichthyoxenus jellinghausii* Herklots. Since I have not seen the type-species and find the Buitenzorg specimens so close to the description and figures of this form, I have thought it best to do this.

*ICHTHYOXENUS JAPONENSIS*, new species.

Body of female oblong-ovate, almost twice as long as wide, 13 mm. long, 7 mm. wide. Surface smooth. Color pale yellow, with scattered black dots.

Head small, triangular, 2 mm. long,  $2\frac{1}{2}$  mm. wide; front rounded. Eyes large, oblong, about 1 mm. in length and separated by a distance equal to 1 mm. or the length of one eye. First antennæ short, composed of six articles and extending to the middle of the eye or to the end of the fifth article of the second antennæ. Second antennæ composed of seven articles and extending almost to the post-lateral angle of the head.

The first segment of the thorax is about twice as long in the median line as any of the three following, being  $1\frac{1}{2}$  mm. in length. The second, third, and fourth segments are subequal. The last three segments gradually decrease in length, the three together measuring  $1\frac{1}{2}$  mm. The anterior margin of the first segment is sinuate in the middle, the lateral parts projecting laterally beyond the

head and being posteriorly constricted. Epimera are present on the last six segments, those of the second, third, and fourth segments

being narrow, elongate plates occupying the anterior half of the lateral margin; those of the last three segments are about as long as wide, with the posterior extremities rounded, and are placed just anterior to the lateral margin of their respective segments.

The abdomen is deeply immersed in the thorax, the lateral parts of the first two segments being completely covered on one side, the second segment partly showing on the other side. The first five segments gradually increase in length, all together measuring  $2\frac{1}{2}$  mm. The sixth or terminal segment is a little longer than wide,  $4\frac{1}{2}$  mm. long, 4 mm. wide, and is posteriorly widely

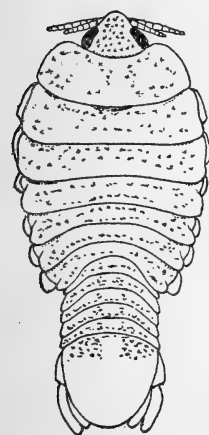


FIG. 5.—*ICHTHYOXENUS JAPONENSIS*, LAKE BIWA, FROM ACHEILOGNATHUS LIMBATUS. MALE.  $\times 5\frac{1}{2}$ .

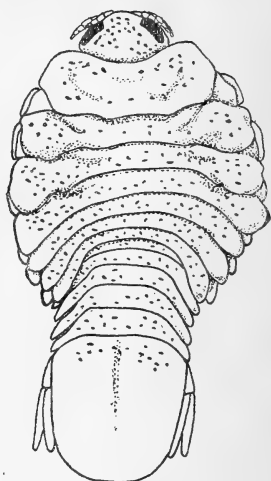


FIG. 4.—*ICHTHYOXENUS JAPONENSIS*, LAKE BIWA, FROM ACHEILOGNATHUS CYONOSTIGMA. FEMALE.  $\times 5$ .

rounded. Its posterior half is thin, semitranslucent, and colorless, with no markings. The uropods are much shorter than the terminal segment of the abdomen, and do not reach its extremity by a distance equal to 1 mm.; the branches are equal in length, narrow, tapering, with rounded extremities, the outer one being slightly narrower than the inner one. The pleopods are also short, not quite reaching the

tip of the uropods and being 1 mm. shorter than the extremity of the terminal abdominal segment.

All seven pairs of legs are prehensile. The last pair has the carpus and merus dilated in rounded expansions on the inferior side. The merus is short, being about one-third the length of the ischium. In the last four pairs of legs these articles show an increasing expansion.

Some of the specimens obtained are larger than the one figured and described, but in most of these the abdomen is curled up at the extremity. I have therefore taken the smallest one as the type.

The male differs from the female in size, being much smaller; in the more symmetrical body, longer antennæ, narrower head, and smaller terminal segment of the abdomen.



FIG. 6.—*ICHTHYOXENUS JAPONENSIS*, LAKE BIWA, FROM *ACHEILOGNATHUS CYONOSTIGMA*. SEVENTH LEG OF FEMALE.  $\times 14\frac{1}{2}$ .

The type-specimens, male and female, were taken from *Acheilognathus cyonostigma* (Jordan and Fowler), found in Lake Biwa, and two males and two females were taken from the same host at Omi, Lake Yogo.

Other specimens are as follows: A male and a female on *Acheilognathus lanceolatum* (Schlegel) from Funayado, Kiusiu, Japan, and a male and a female on the same host from Omi, Lake Yogo; a male and a female on *Acheilognathus tabira* Jordan and Thompson, MSS., from Lake Biwa; one female on *Gnathopogon elongata* (Schlegel) from Lake Biwa; two males and two females from two specimens of *Acheilognathus rhombeum* (Schlegel) from Lake Biwa; two males and two females from *Acheilognathus limbatum* Jordan and Snyder from Lake Biwa.

This species differs from *I. jellinghausii* in the larger eyes, the larger and more circular form of the terminal segment of the abdomen, the shorter uropoda, the shorter and differently shaped merus of the seventh pair of legs, and the larger head and wider abdomen, compared with the thorax.

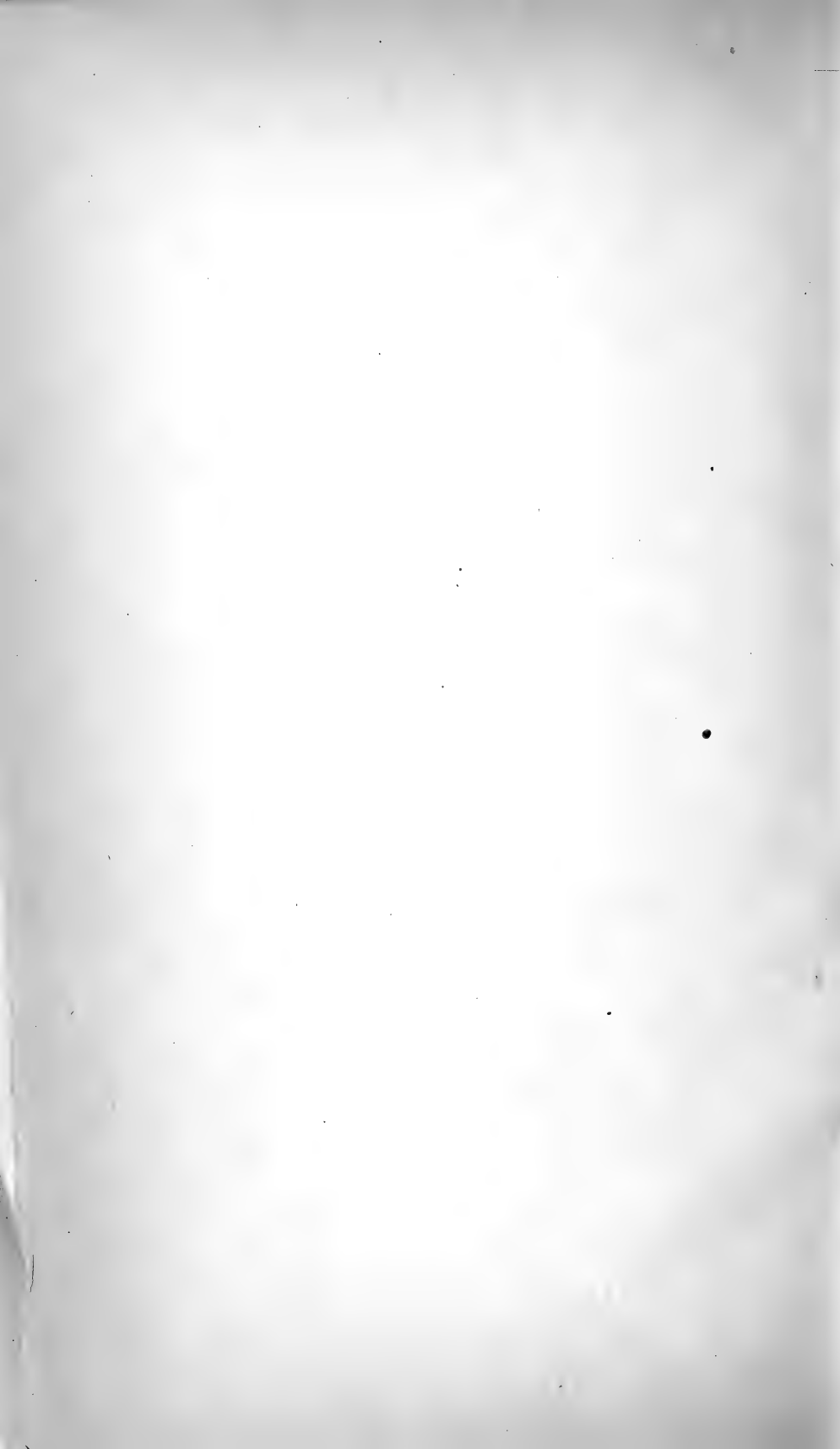
*Type*.—Cat. No. 45617, U.S.N.M.

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<sup>1</sup> I have not been able to obtain this paper.



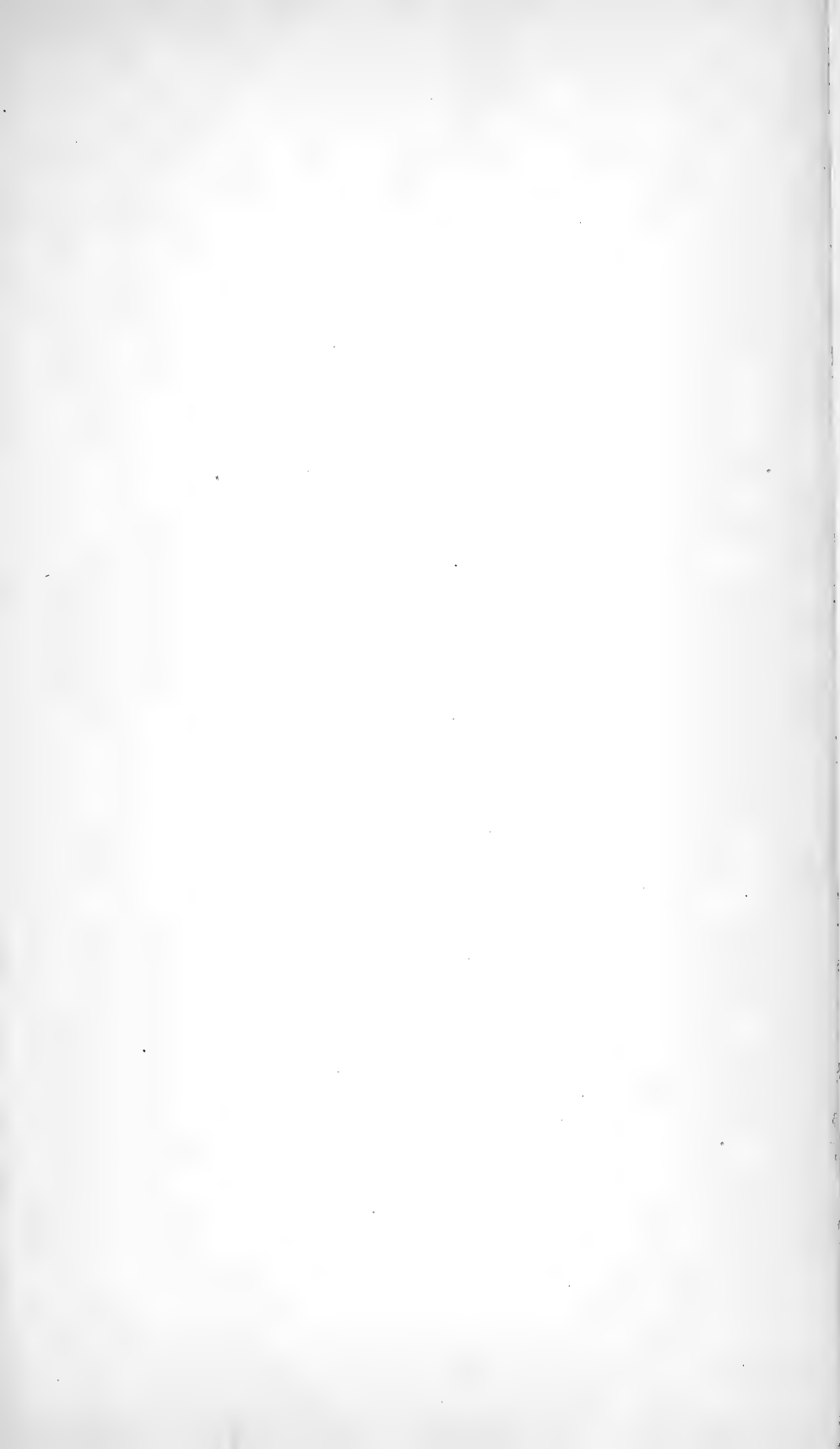






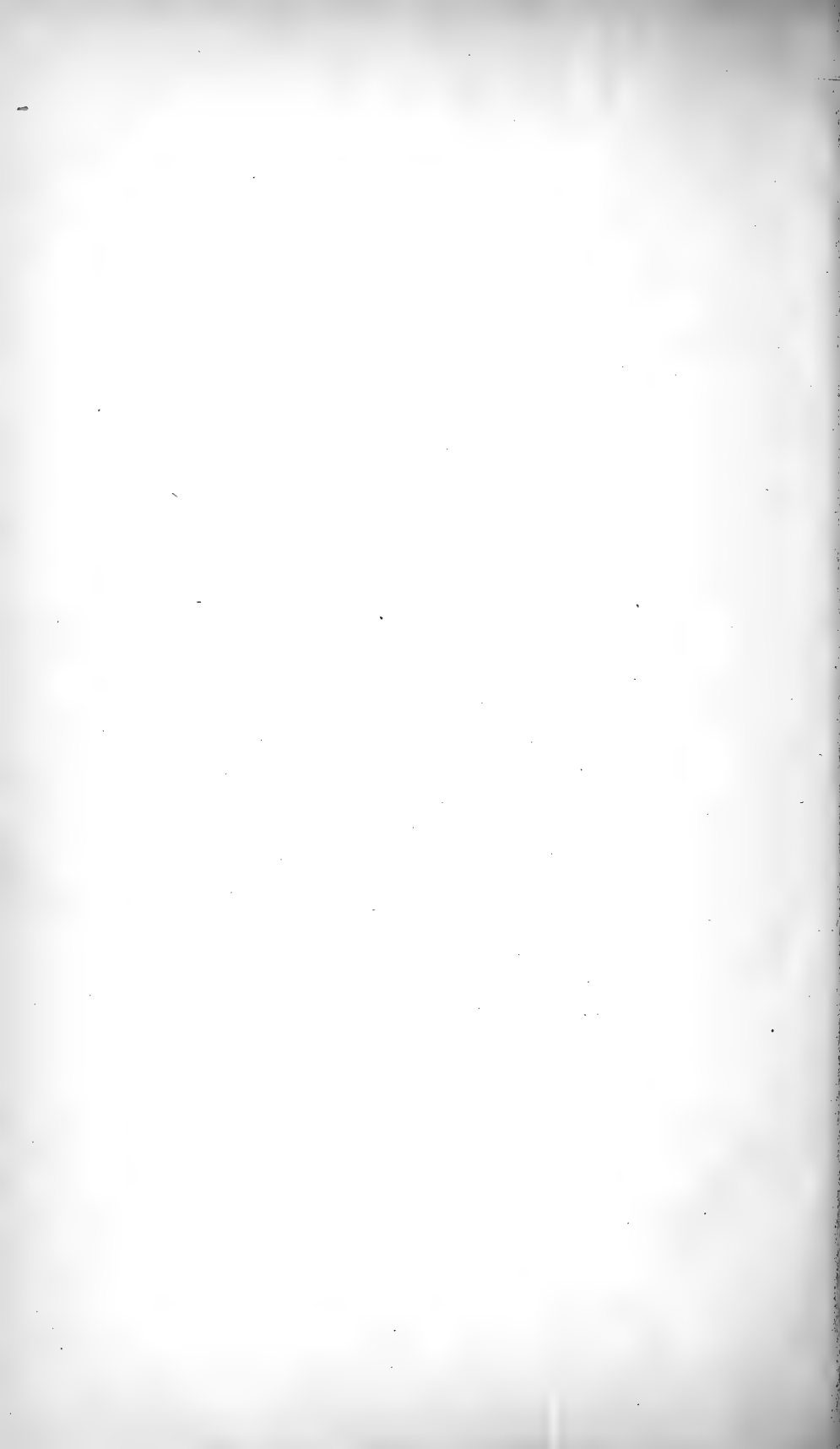


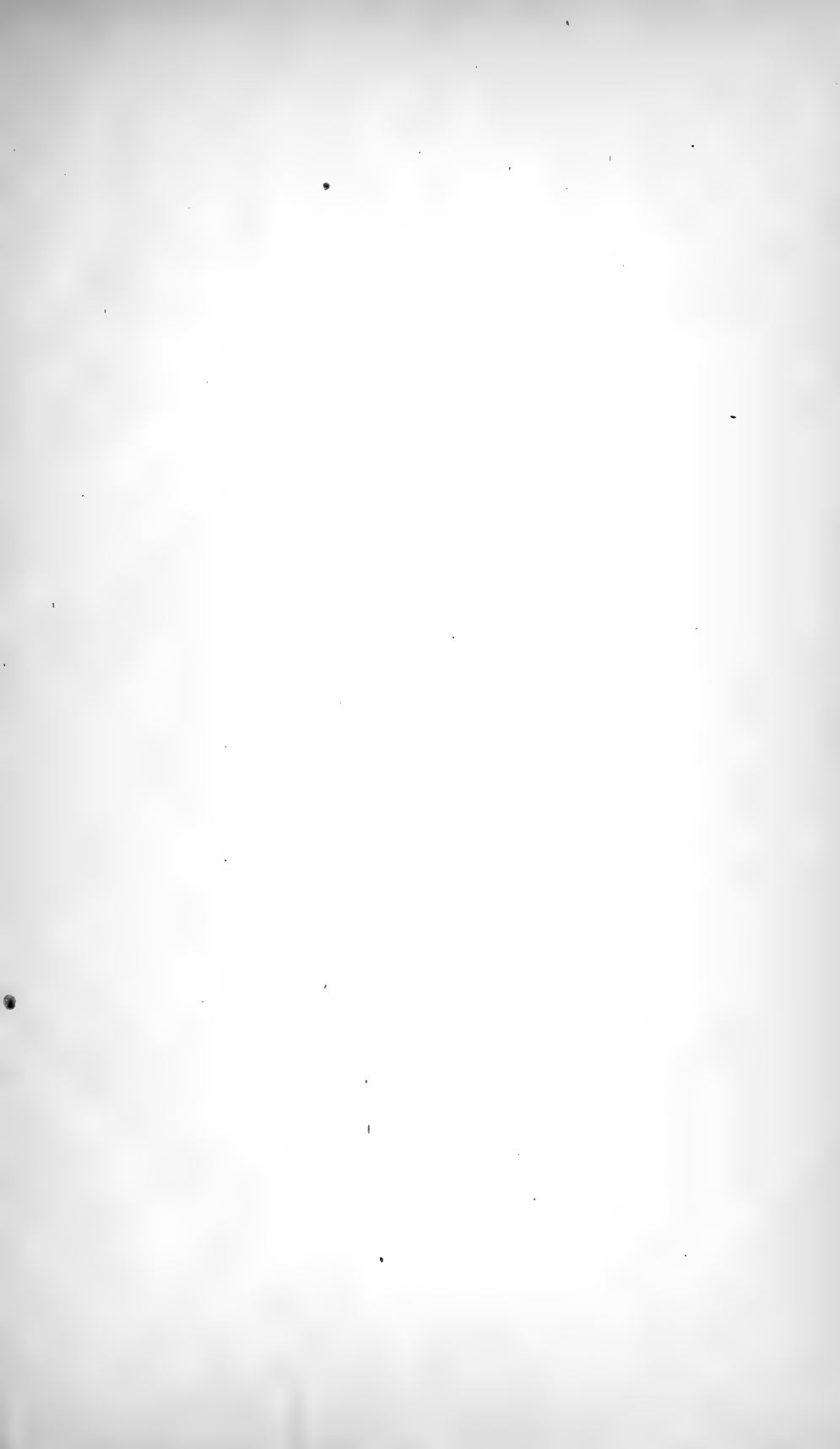
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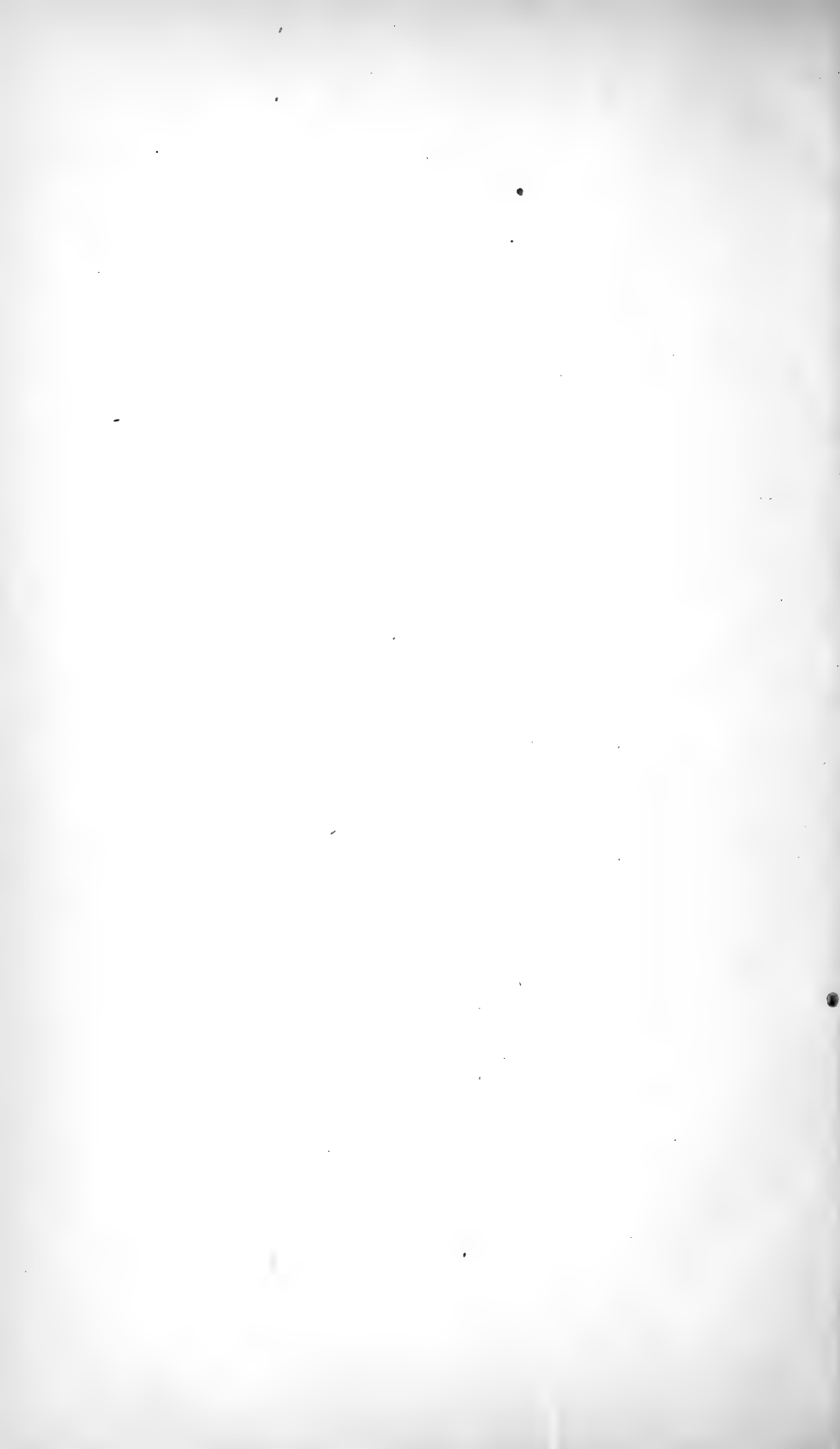


















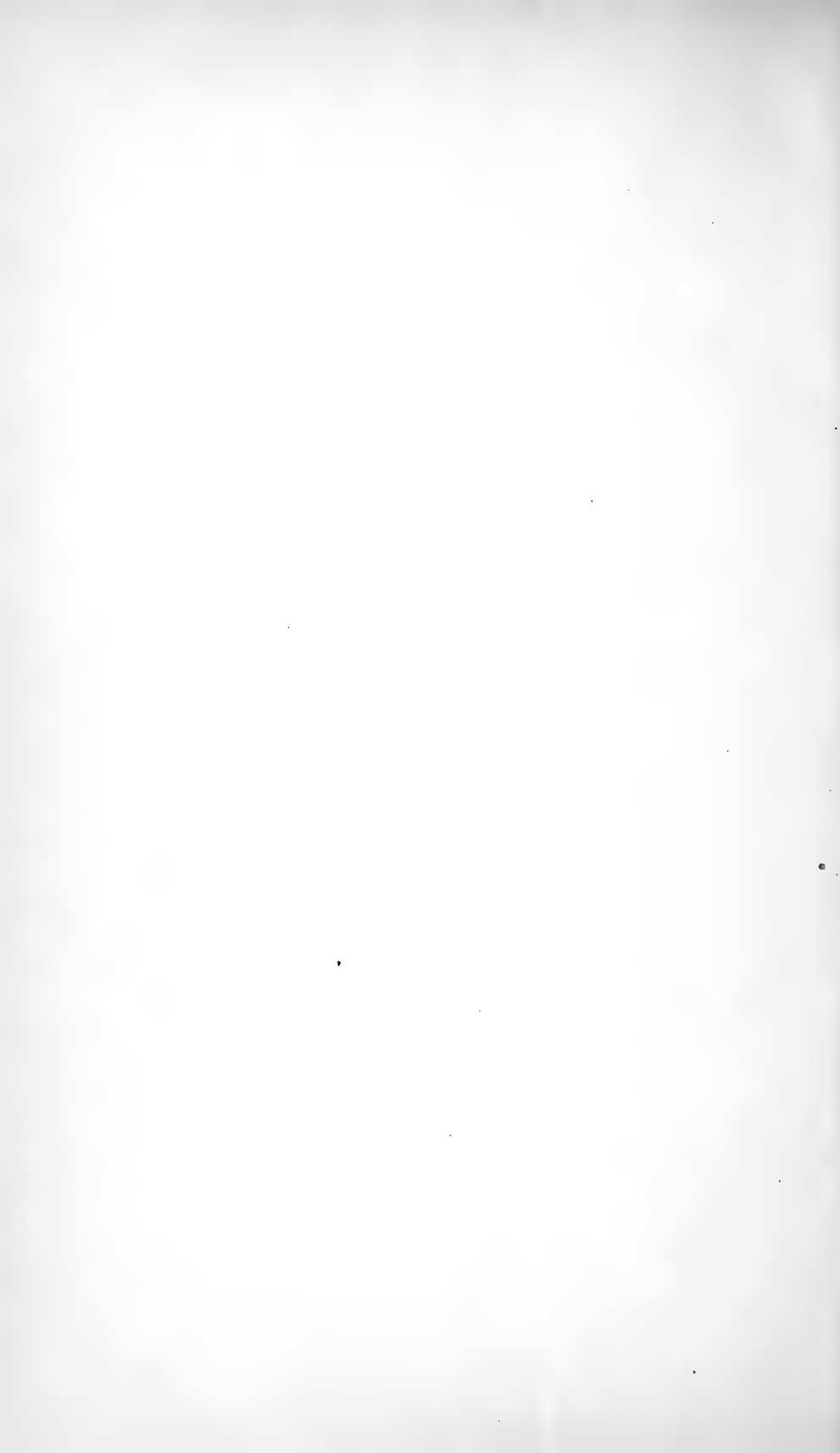
























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